SAF-RC-075
100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF FINAL VALIDATION PACKAGE TO:

Kathy Wendt H4-21

COMMENTS:

SDG JP0872 SAF-RC-075

Waste Site: 100-D-81

Date: 24 November 2014
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 100-D-81
Subject: Inorganic - Data Package No. JP0872-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0872 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1V113	10/15/14	Soil	C	See note 1
J1V114	10/15/14	Soil	C	See note 1
J1V115	10/15/14	Soil	C	See note 1
J1V116	10/15/14	Soil	C	See note 1
J1V117	10/15/14	Soil	C	See note 1
J1V118	10/15/14	Soil	C	See note 1
J1V119	10/15/14	Soil	C	See note 1
J1V120	10/15/14	Soil	C	See note 1
J1V121	10/15/14	Soil	C	See note 1
J1V122	10/15/14	Soil	C	See note 1
J1V123	10/15/14	Soil	C	See note 1
J1V124	10/15/14	Soil	C	See note 1
J1V125	10/15/14	Soil	C	See note 1
J1V126	10/15/14	Soil	C	See note 1

1 - ICP metals (6010B) and mercury (7471A).

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

· Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for mercury and 6 months for ICP metals.

All holding times were acceptable.

· Preparation (Method) Blanks

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "UJ". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

Due to method blank contamination, the silver results in samples J1V121, J1V122 and J1V126 were qualified as undetected and flagged "UJ".

Due to method blank contamination, the zinc result in sample J1V126 was qualified as undetected and flagged "UJ".

All other preparation blank results were acceptable.

Field (Equipment) Blank

One field blank (J1V126) was submitted for analysis. Twelve analytes were detected in the field blank. Under the WCH statement of work, no qualification is required.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to matrix spike recoveries outside QC limits, all antimony (67%) and silicon (17%) results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (8%), all silicon results were qualified as estimates and flagged "J".

All other accuracy results were acceptable

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J1V122/J1V125) was submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data package No. JP0872 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, the silver results in samples J1V121, J1V122 and J1V126 were qualified as undetected and flagged "UJ".
- Due to method blank contamination, the zinc result in sample J1V126 was qualified as undetected and flagged "UJ".
- Due to matrix spike recoveries outside QC limits, all antimony (67%) and silicon (17%) results were qualified as estimates and flagged "J".
- Due to an LCS recovery outside QC limits (8%), all silicon results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

INORGANIC DATA QUALIFICATION SUMMARY*

SDG: JP0872	**REVIEWER: ELR**	**Project: 100-D-81**	**PAGE_1_OF_1**
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Silicon	J	All	LCS recovery
Antimony Silicon	J	All	MS recovery
Silver	UJ	J1V121, J1V122 J1V126	Method blank contamination
Zinc	UJ	J1V126	Method bank contamination

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V113

Lab Sample ID: 280-61368-1
Client Matrix: Solid

% Moisture: 4.0

Date Sampled: 10/15/2014 1252
Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 10/21/2014 0040
Prep Date: 10/20/2014 0700

Analysis Batch: 280-248842
Prep Batch: 280-248528

11/22/14

Instrument ID: MT_026
Lab File ID: 26e102014.asc
Initial Weight/Volume: 1.08 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4540	X	1.5	4.8
Antimony		0.37	U J	0.37	0.58
Arsenic		2.0		0.64	0.96
Barium		38.5	X	0.073	0.48
Boron		0.95	U	0.95	1.9
Calcium		7970	X	13.6	48.2
Chromium		3.6	X	0.056	0.19
Cobalt		7.1	X	0.096	0.96
Copper		13.8	X	0.21	0.96
Iron		21600	X	3.7	4.8
Lead		2.8		0.26	0.48
Magnesium		3370	X	3.6	19.3
Manganese		248	X	0.096	0.96
Molybdenum		0.25	U	0.25	1.9
Potassium		466		39.5	289
Selenium		0.83	U	0.83	0.96
Silicon		325	N X J	5.5	9.6
Silver		0.15	U	0.15	0.19
Vanadium		51.7	X	0.091	1.9
Zinc		35.4	X	0.38	0.96

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 10/21/2014 1828
Prep Date: 10/20/2014 0700

Analysis Batch: 280-249003
Prep Batch: 280-248528

Instrument ID: MT_026
Lab File ID: 26c102114.asc
Initial Weight/Volume: 1.08 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Cadmium		0.11	B	0.040	0.19
Nickel		6.5		0.12	3.9
Sodium		386		56.9	116

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 2.0
Analysis Date: 10/21/2014 1934
Prep Date: 10/20/2014 0700

Analysis Batch: 280-249003
Prep Batch: 280-248528

Instrument ID: MT_026
Lab File ID: 26c102114.asc
Initial Weight/Volume: 1.08 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Beryllium		0.064	U	0.064	0.39

7471A Mercury (CVAA)

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: **J1V113**

Lab Sample ID: 280-61368-1
Client Matrix: Solid

% Moisture: 4.0

Date Sampled: 10/15/2014 1252
Date Received: 10/17/2014 0900

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-249102	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-248899	Lab File ID:	141021aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.69 g
Analysis Date:	10/21/2014 1857			Final Weight/Volume:	50 mL
Prep Date:	10/21/2014 1515				

11/22/14

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0050	U	0.0050	0.015

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V114

Lab Sample ID: 280-61368-2
Client Matrix: Solid

% Moisture: 4.3

Date Sampled: 10/15/2014 1242
Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-248842	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-248528	Lab File ID:	26e102014 asc
Dilution:	1.0			Initial Weight/Volume:	1.12 g
Analysis Date:	10/21/2014 0051			Final Weight/Volume:	100 mL
Prep Date:	10/20/2014 0700				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5070	X	1.4	4.7
Antimony		0.35	UJ	0.35	0.56
Arsenic		2.1		0.62	0.93
Barium		58.6	X	0.071	0.47
Boron		0.91	U	0.91	1.9
Calcium		5420	X	13.1	46.6
Chromium		3.8	X	0.054	0.19
Cobalt		7.0	X	0.093	0.93
Copper		14.1	X	0.20	0.93
Iron		23300	X	3.5	4.7
Lead		3.1		0.25	0.47
Magnesium		3200	X	3.5	18.7
Manganese		252	X	0.093	0.93
Molybdenum		0.24	U	0.24	1.9
Potassium		541		38.2	280
Selenium		0.80	U	0.80	0.93
Silicon		281	NXJ	5.3	9.3
Silver		0.15	U	0.15	0.19
Vanadium		64.9	X	0.088	1.9
Zinc		38.8	X	0.37	0.93

Analysis Method:	6010B	Analysis Batch:	280-249003	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-248528	Lab File ID:	26c102114.asc
Dilution:	1.0			Initial Weight/Volume:	1.12 g
Analysis Date:	10/21/2014 1839			Final Weight/Volume:	100 mL
Prep Date:	10/20/2014 0700				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Cadmium		0.13	B	0.038	0.19
Nickel		6.2		0.11	3.7
Sodium		234		55.0	112

Analysis Method:	6010B	Analysis Batch:	280-249003	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-248528	Lab File ID:	26c102114.asc
Dilution:	2.0			Initial Weight/Volume:	1.12 g
Analysis Date:	10/21/2014 1945			Final Weight/Volume:	100 mL
Prep Date:	10/20/2014 0700				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Beryllium		0.062	U	0.062	0.37

7471A Mercury (CVAA)

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: **J1V114**

Lab Sample ID: 280-61368-2
Client Matrix: Solid

% Moisture: 4.3

Date Sampled: 10/15/2014 1242
Date Received: 10/17/2014 0900

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-249102	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-248899	Lab File ID:	141021aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.55 g
Analysis Date:	10/21/2014 1904			Final Weight/Volume:	50 mL
Prep Date:	10/21/2014 1515				

11/22/14

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0063	U	0.0063	0.019

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V115

Lab Sample ID: 280-61368-3
Client Matrix: Solid

% Moisture: 3.6

Date Sampled: 10/15/2014 1248
Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 10/21/2014 0053
Prep Date: 10/20/2014 0700

Analysis Batch: 280-248842
Prep Batch: 280-248528

11/22/14

Instrument ID: MT_026
Lab File ID: 26e102014.asc
Initial Weight/Volume: 1.10 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7180	X	1.5	4.7
Antimony		0.36	U J	0.36	0.57
Arsenic		2.7		0.62	0.94
Barium		68.8	X	0.072	0.47
Beryllium		0.031	U	0.031	0.19
Boron		1.5	B	0.92	1.9
Calcium		7310	X	13.3	47.2
Chromium		10.7	X	0.055	0.19
Cobalt		7.1	X	0.094	0.94
Copper		14.2	X	0.20	0.94
Iron		20700	X	3.6	4.7
Lead		3.8		0.25	0.47
Magnesium		4460	X	3.5	18.9
Manganese		309	X	0.094	0.94
Molybdenum		0.25	U	0.25	1.9
Potassium		1200		38.7	283
Selenium		0.81	U	0.81	0.94
Silicon		553	NX J	5.3	9.4
Silver		0.15	U	0.15	0.19
Vanadium		42.9	X	0.089	1.9
Zinc		36.2	X	0.38	0.94

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 10/21/2014 1841
Prep Date: 10/20/2014 0700

Analysis Batch: 280-249003
Prep Batch: 280-248528

Instrument ID: MT_026
Lab File ID: 26c102114.asc
Initial Weight/Volume: 1.10 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Cadmium		0.16	B	0.039	0.19
Nickel		11.9		0.12	3.8
Sodium		187		55.7	113

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 10/21/2014 1906
Prep Date: 10/21/2014 1515

Analysis Batch: 280-249102
Prep Batch: 280-248899

Instrument ID: MT_033
Lab File ID: 141021aa.txt
Initial Weight/Volume: 0.66 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0052	U	0.0052	0.016

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V116

Lab Sample ID: 280-61368-4
Client Matrix: Solid % Moisture: 5.9

Date Sampled: 10/15/2014 1232
Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 10/21/2014 0056
Prep Date: 10/20/2014 0700

Analysis Batch: 280-248842
Prep Batch: 280-248528

V 11/22/14

Instrument ID: MT_026
Lab File ID: 26e102014.asc
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		8830	X	1.6	5.3
Antimony		0.40	U J	0.40	0.64
Arsenic		2.9		0.70	1.1
Barium		71.8	X	0.081	0.53
Beryllium		0.035	U	0.035	0.21
Boron		1.7	B	1.0	2.1
Calcium		4010	X	15.0	53.1
Chromium		12.5	X	0.062	0.21
Cobalt		7.5	X	0.11	1.1
Copper		14.4	X	0.23	1.1
Iron		22600	X	4.0	5.3
Lead		4.8		0.29	0.53
Magnesium		4520	X	3.9	21.3
Manganese		347	X	0.11	1.1
Molybdenum		0.28	U	0.28	2.1
Potassium		1610		43.6	319
Selenium		0.91	U	0.91	1.1
Silicon		696	N X J	6.0	10.6
Silver		0.17	U	0.17	0.21
Vanadium		45.9	X	0.10	2.1
Zinc		39.9	X	0.42	1.1

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 10/21/2014 1844
Prep Date: 10/20/2014 0700

Analysis Batch: 280-249003
Prep Batch: 280-248528

Instrument ID: MT_026
Lab File ID: 26c102114.asc
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Cadmium		0.13	B	0.044	0.21
Nickel		12.5		0.13	4.3
Sodium		179		62.7	128

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 10/21/2014 1909
Prep Date: 10/21/2014 1515

Analysis Batch: 280-249102
Prep Batch: 280-248899

Instrument ID: MT_033
Lab File ID: 141021aa.txt
Initial Weight/Volume: 0.51 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0069	U	0.0069	0.021

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V117

Lab Sample ID: 280-61368-5
Client Matrix: Solid

% Moisture: 3.5

Date Sampled: 10/15/2014 1238
Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 10/21/2014 0059
Prep Date: 10/20/2014 0700

Analysis Batch: 280-248842
Prep Batch: 280-248528

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Instrument ID: MT_026
Lab File ID: 26e102014.asc
Initial Weight/Volume: 1.03 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5670	X J	1.6	5.0
Antimony		0.38	U J	0.38	0.60
Arsenic		2.4		0.66	1.0
Barium		45.3	X	0.076	0.50
Boron		0.99	U	0.99	2.0
Calcium		10400	X	14.2	50.3
Chromium		7.9	X	0.058	0.20
Cobalt		6.5	X	0.10	1.0
Copper		13.8	X	0.22	1.0
Iron		20800	X	3.8	5.0
Lead		2.9		0.27	0.50
Magnesium		4150	X	3.7	20.1
Manganese		259	X	0.10	1.0
Molybdenum		0.28	B	0.26	2.0
Potassium		634		41.2	302
Selenium		0.87	U	0.87	1.0
Silicon		408	N X J	5.7	10.1
Silver		0.16	U	0.16	0.20
Vanadium		49.0	X	0.095	2.0
Zinc		37.1	X	0.40	1.0

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 10/21/2014 1847
Prep Date: 10/20/2014 0700

Analysis Batch: 280-249003
Prep Batch: 280-248528

Instrument ID: MT_026
Lab File ID: 26c102114.asc
Initial Weight/Volume: 1.03 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Beryllium		0.033	U	0.033	0.20
Cadmium		0.12	B	0.041	0.20
Nickel		9.4		0.12	4.0
Sodium		243		59.3	121

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 10/21/2014 1911
Prep Date: 10/21/2014 1515

Analysis Batch: 280-249102
Prep Batch: 280-248899

Instrument ID: MT_033
Lab File ID: 141021aa.txt
Initial Weight/Volume: 0.65 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0053	U	0.0053	0.016

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V118

Lab Sample ID: 280-61368-6
Client Matrix: Solid

% Moisture: 3.1

Date Sampled: 10/15/2014 1223
Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 10/21/2014 0112
Prep Date: 10/20/2014 0700

Analysis Batch: 280-248842
Prep Batch: 280-248528

11/22/14

Instrument ID: MT_026
Lab File ID: 26e102014.asc
Initial Weight/Volume: 1.07 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5560	X J	1.5	4.8
Antimony		0.37	U J	0.37	0.58
Arsenic		2.2		0.64	0.96
Barium		61.2	X	0.073	0.48
Boron		0.95	U	0.95	1.9
Calcium		8250	X	13.6	48.2
Chromium		7.1	X	0.056	0.19
Cobalt		7.6	X	0.096	0.96
Copper		15.0	X	0.21	0.96
Iron		23100	X	3.7	4.8
Lead		3.1		0.26	0.48
Magnesium		4060	X	3.6	19.3
Manganese		271	X	0.096	0.96
Molybdenum		0.25	U	0.25	1.9
Potassium		670		39.6	289
Selenium		0.83	U	0.83	0.96
Silicon		695	N X J	5.5	9.6
Silver		0.15	U	0.15	0.19
Vanadium		54.1	X	0.091	1.9
Zinc		40.1	X	0.38	0.96

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 10/21/2014 1900
Prep Date: 10/20/2014 0700

Analysis Batch: 280-249003
Prep Batch: 280-248528

Instrument ID: MT_026
Lab File ID: 26c102114.asc
Initial Weight/Volume: 1.07 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Cadmium		0.12	B	0.040	0.19
Nickel		10.4		0.12	3.9
Sodium		222		56.9	116

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 2.0
Analysis Date: 10/21/2014 1950
Prep Date: 10/20/2014 0700

Analysis Batch: 280-249003
Prep Batch: 280-248528

Instrument ID: MT_026
Lab File ID: 26c102114.asc
Initial Weight/Volume: 1.07 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Beryllium		0.064	U	0.064	0.39

7471A Mercury (CVAA)

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V118

Lab Sample ID: 280-61368-6
Client Matrix: Solid

% Moisture: 3.1

Date Sampled: 10/15/2014 1223
Date Received: 10/17/2014 0900

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-249102	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-248899	Lab File ID:	141021aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.67 g
Analysis Date:	10/21/2014 1913			Final Weight/Volume:	50 mL
Prep Date:	10/21/2014 1515				

11/22/14

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0051	U	0.0051	0.016

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V119

Lab Sample ID: 280-61368-7
Client Matrix: Solid

% Moisture: 4.0

Date Sampled: 10/15/2014 1228
Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 10/21/2014 0114
Prep Date: 10/20/2014 0700

Analysis Batch: 280-248842
Prep Batch: 280-248528

11/22/14

Instrument ID: MT_026
Lab File ID: 26e102014.asc
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7360	X	1.6	5.2
Antimony		0.40	U J	0.40	0.63
Arsenic		3.9		0.69	1.0
Barium		76.6	X	0.079	0.52
Beryllium		0.034	U	0.034	0.21
Boron		1.3	B	1.0	2.1
Calcium		19800	X	14.7	52.1
Chromium		13.3	X	0.060	0.21
Cobalt		6.6	X	0.10	1.0
Copper		17.5	X	0.23	1.0
Iron		20100	X	4.0	5.2
Lead		3.8		0.28	0.52
Magnesium		4690	X	3.9	20.8
Manganese		299	X	0.10	1.0
Molybdenum		0.28	B	0.27	2.1
Potassium		922		42.7	313
Selenium		0.90	U	0.90	1.0
Silicon		461	NX J	5.9	10.4
Silver		0.17	U	0.17	0.21
Vanadium		46.4	X	0.098	2.1
Zinc		36.2	X	0.41	1.0

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 10/21/2014 1903
Prep Date: 10/20/2014 0700

Analysis Batch: 280-249003
Prep Batch: 280-248528

Instrument ID: MT_026
Lab File ID: 26c102114.asc
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Cadmium		0.17	B	0.043	0.21
Nickel		13.0		0.13	4.2
Sodium		220		61.5	125

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 10/21/2014 1920
Prep Date: 10/21/2014 1515

Analysis Batch: 280-249102
Prep Batch: 280-248899

Instrument ID: MT_033
Lab File ID: 141021aa.txt
Initial Weight/Volume: 0.64 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0054	U	0.0054	0.017

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V120

Lab Sample ID: 280-61368-8
Client Matrix: Solid % Moisture: 5.5

Date Sampled: 10/15/2014 1213
Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 10/21/2014 0117
Prep Date: 10/20/2014 0700

Analysis Batch: 280-248842
Prep Batch: 280-248528

11/22/14

Instrument ID: MT_026
Lab File ID: 26e102014.asc
Initial Weight/Volume: 1.10 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		6750	X	1.5	4.8
Antimony		0.37	U J	0.37	0.58
Arsenic		2.6		0.64	0.96
Barium		56.0	X	0.073	0.48
Beryllium		0.032	U	0.032	0.19
Boron		1.3	B	0.94	1.9
Calcium		5800	X	13.6	48.1
Chromium		9.3	X	0.056	0.19
Cobalt		7.6	X	0.096	0.96
Copper		18.2	X	0.21	0.96
Iron		22900	X	3.7	4.8
Lead		3.6		0.26	0.48
Magnesium		4400	X	3.6	19.2
Manganese		273	X	0.096	0.96
Molybdenum		0.25	U	0.25	1.9
Potassium		739		39.4	289
Selenium		0.83	U	0.83	0.96
Silicon		721	N X J	5.4	9.6
Silver		0.15	U	0.15	0.19
Vanadium		51.9	X	0.090	1.9
Zinc		40.2	X	0.38	0.96

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 10/21/2014 1905
Prep Date: 10/20/2014 0700

Analysis Batch: 280-249003
Prep Batch: 280-248528

Instrument ID: MT_026
Lab File ID: 26c102114.asc
Initial Weight/Volume: 1.10 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Cadmium		0.16	B	0.039	0.19
Nickel		11.1		0.12	3.8
Sodium		295		56.8	115

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 10/21/2014 1922
Prep Date: 10/21/2014 1515

Analysis Batch: 280-249102
Prep Batch: 280-248899

Instrument ID: MT_033
Lab File ID: 141021aa.txt
Initial Weight/Volume: 0.56 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0063	U	0.0063	0.019

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V121

Lab Sample ID: 280-61368-9
Client Matrix: Solid % Moisture: 5.0

Date Sampled: 10/15/2014 1218
Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 10/21/2014 0120
Prep Date: 10/20/2014 0700

Analysis Batch: 280-248842
Prep Batch: 280-248528

11/22/14

Instrument ID: MT_026
Lab File ID: 26e102014.asc
Initial Weight/Volume: 1.19 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		8260	X	1.4	4.4
Antimony		0.34	U J	0.34	0.53
Arsenic		3.1		0.58	0.88
Barium		84.9	X	0.067	0.44
Beryllium		0.029	U	0.029	0.18
Boron		1.5	B	0.87	1.8
Calcium		11500	X	12.5	44.2
Chromium		12.4	X	0.051	0.18
Cobalt		6.6	X	0.088	0.88
Copper		20.0	X	0.19	0.88
Iron		20500	X	3.4	4.4
Lead		4.5		0.24	0.44
Magnesium		4480	X	3.3	17.7
Manganese		305	X	0.088	0.88
Molybdenum		0.23	U	0.23	1.8
Potassium		1020		36.3	265
Selenium		0.76	U	0.76	0.88
Silicon		745	N X J	5.0	8.8
Silver		0.15	B C U	0.14	0.18
Vanadium		43.1	X	0.083	1.8
Zinc		37.7	X	0.35	0.88

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 10/21/2014 1908
Prep Date: 10/20/2014 0700

Analysis Batch: 280-249003
Prep Batch: 280-248528

Instrument ID: MT_026
Lab File ID: 26c102114.asc
Initial Weight/Volume: 1.19 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Cadmium		0.14	B	0.036	0.18
Nickel		12.2		0.11	3.5
Sodium		204		52.2	106

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 10/21/2014 1925
Prep Date: 10/21/2014 1515

Analysis Batch: 280-249102
Prep Batch: 280-248899

Instrument ID: MT_033
Lab File ID: 141021aa.txt
Initial Weight/Volume: 0.61 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0057	U	0.0057	0.018

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V122

Lab Sample ID: 280-61368-10
Client Matrix: Solid

% Moisture: 3.7

Date Sampled: 10/15/2014 1202
Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-248842	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-248528	Lab File ID:	26e102014.asc
Dilution:	1.0			Initial Weight/Volume:	1.00 g
Analysis Date:	10/21/2014 0122			Final Weight/Volume:	100 mL
Prep Date:	10/20/2014 0700				

11/22/14

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		9190	X	1.6	5.2
Antimony		0.39	U J	0.39	0.62
Arsenic		2.7		0.69	1.0
Barium		83.9	X	0.079	0.52
Beryllium		0.034	U	0.034	0.21
Boron		2.5		1.0	2.1
Calcium		3820	X	14.6	51.9
Chromium		11.9	X	0.060	0.21
Cobalt		7.7	X	0.10	1.0
Copper		13.5	X	0.23	1.0
Iron		23500	X	3.9	5.2
Lead		4.9		0.28	0.52
Magnesium		4190	X	3.8	20.8
Manganese		376	X	0.10	1.0
Molybdenum		0.27	U	0.27	2.1
Potassium		1930		42.6	311
Selenium		0.89	U	0.89	1.0
Silicon		796	N X J	5.9	10.4
Silver		0.19	B C U	0.17	0.21
Vanadium		50.4	X	0.098	2.1
Zinc		43.6	X	0.41	1.0

Analysis Method:	6010B	Analysis Batch:	280-249003	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-248528	Lab File ID:	26c102114.asc
Dilution:	1.0			Initial Weight/Volume:	1.00 g
Analysis Date:	10/21/2014 1911			Final Weight/Volume:	100 mL
Prep Date:	10/20/2014 0700				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Cadmium		0.17	B	0.043	0.21
Nickel		11.8		0.13	4.2
Sodium		173		61.2	125

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-249102	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-248899	Lab File ID:	141021aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.65 g
Analysis Date:	10/21/2014 1927			Final Weight/Volume:	50 mL
Prep Date:	10/21/2014 1515				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0053	U	0.0053	0.016

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V123

Lab Sample ID: 280-61368-11
Client Matrix: Solid

% Moisture: 3.2

Date Sampled: 10/15/2014 1209
Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-248842	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-248528	Lab File ID:	26e102014.asc
Dilution:	1.0			Initial Weight/Volume:	1.15 g
Analysis Date:	10/21/2014 0125			Final Weight/Volume:	100 mL
Prep Date:	10/20/2014 0700				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5140	X	1.4	4.5
Antimony		0.34	U J	0.34	0.54
Arsenic		2.1		0.59	0.90
Barium		51.1	X	0.068	0.45
Boron		0.88	U	0.88	1.8
Calcium		8150	X	12.7	44.9
Chromium		4.9	X	0.052	0.18
Cobalt		7.3	X	0.090	0.90
Copper		15.1	X	0.19	0.90
Iron		24400	X	3.4	4.5
Lead		2.8		0.24	0.45
Magnesium		4010	X	3.3	18.0
Manganese		274	X	0.090	0.90
Molybdenum		0.23	U	0.23	1.8
Potassium		562		36.8	269
Selenium		0.77	U	0.77	0.90
Silicon		488	N X J	5.1	9.0
Silver		0.14	U	0.14	0.18
Vanadium		58.4	X	0.084	1.8
Zinc		40.7	X	0.36	0.90

Analysis Method:	6010B	Analysis Batch:	280-249003	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-248528	Lab File ID:	26c102114.asc
Dilution:	1.0			Initial Weight/Volume:	1.15 g
Analysis Date:	10/21/2014 1913			Final Weight/Volume:	100 mL
Prep Date:	10/20/2014 0700				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Cadmium		0.11	B	0.037	0.18
Nickel		8.8		0.11	3.6
Sodium		331		53.0	108

Analysis Method:	6010B	Analysis Batch:	280-249003	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-248528	Lab File ID:	26c102114.asc
Dilution:	2.0			Initial Weight/Volume:	1.15 g
Analysis Date:	10/21/2014 1953			Final Weight/Volume:	100 mL
Prep Date:	10/20/2014 0700				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Beryllium		0.059	U	0.059	0.36

7471A Mercury (CVAA)

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V123

Lab Sample ID: 280-61368-11
Client Matrix: Solid

% Moisture: 3.2

Date Sampled: 10/15/2014 1209
Date Received: 10/17/2014 0900

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-249102	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-248899	Lab File ID:	141021aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.55 g
Analysis Date:	10/21/2014 1929			Final Weight/Volume:	50 mL
Prep Date:	10/21/2014 1515				

11/22/14

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0062	U	0.0062	0.019

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V124

Lab Sample ID: 280-61368-12
Client Matrix: Solid

% Moisture: 5.3

Date Sampled: 10/15/2014 1308
Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-248842	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-248528	Lab File ID:	26e102014.asc
Dilution:	1.0			Initial Weight/Volume:	1.15 g
Analysis Date:	10/21/2014 0128			Final Weight/Volume:	100 mL
Prep Date:	10/20/2014 0700				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		8050	X	1.4	4.6
Antimony		0.35	U J	0.35	0.55
Arsenic		7.6		0.61	0.92
Barium		81.1	X	0.070	0.46
Boron		2.2		0.90	1.8
Calcium		5580	X	13.0	45.9
Chromium		12.4	X	0.053	0.18
Cobalt		7.9	X	0.092	0.92
Copper		19.8	X	0.20	0.92
Iron		24600	X	3.5	4.6
Lead		18.9		0.25	0.46
Magnesium		4550	X	3.4	18.4
Manganese		320	X	0.092	0.92
Molybdenum		0.24	U	0.24	1.8
Potassium		1230		37.7	276
Selenium		0.79	U	0.79	0.92
Silicon		473	N X J	5.2	9.2
Silver		0.15	U	0.15	0.18
Vanadium		59.0	X	0.086	1.8
Zinc		146	X	0.37	0.92

Analysis Method:	6010B	Analysis Batch:	280-249003	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-248528	Lab File ID:	26c102114.asc
Dilution:	1.0			Initial Weight/Volume:	1.15 g
Analysis Date:	10/21/2014 1916			Final Weight/Volume:	100 mL
Prep Date:	10/20/2014 0700				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Cadmium		1.3		0.038	0.18
Nickel		12.6		0.11	3.7
Sodium		276		54.2	110

Analysis Method:	6010B	Analysis Batch:	280-249003	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-248528	Lab File ID:	26c102114.asc
Dilution:	2.0			Initial Weight/Volume:	1.15 g
Analysis Date:	10/21/2014 1955			Final Weight/Volume:	100 mL
Prep Date:	10/20/2014 0700				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Beryllium		0.061	U	0.061	0.37

7471A Mercury (CVAA)

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V124

Lab Sample ID: 280-61368-12
Client Matrix: Solid

% Moisture: 5.3

Date Sampled: 10/15/2014 1308
Date Received: 10/17/2014 0900

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-249102	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-248899	Lab File ID:	141021aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.64 g
Analysis Date:	10/21/2014 1932			Final Weight/Volume:	50 mL
Prep Date:	10/21/2014 1515				

11/22/14

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.010	B	0.0055	0.017

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V125

Lab Sample ID: 280-61368-13
Client Matrix: Solid

% Moisture: 9.4

Date Sampled: 10/15/2014 1202
Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 10/21/2014 0130
Prep Date: 10/20/2014 0700

Analysis Batch: 280-248842
Prep Batch: 280-248528

11/22/14

Instrument ID: MT_026
Lab File ID: 26e102014.asc
Initial Weight/Volume: 1.06 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		9580	X	1.6	5.2
Antimony		0.40	U J	0.40	0.62
Arsenic		3.0		0.69	1.0
Barium		83.4	X	0.079	0.52
Beryllium		0.034	U	0.034	0.21
Boron		2.1		1.0	2.1
Calcium		3970	X	14.7	52.1
Chromium		12.2	X	0.060	0.21
Cobalt		7.8	X	0.10	1.0
Copper		14.3	X	0.23	1.0
Iron		24300	X	4.0	5.2
Lead		5.0		0.28	0.52
Magnesium		4510	X	3.9	20.8
Manganese		380	X	0.10	1.0
Molybdenum		0.27	U	0.27	2.1
Potassium		2020		42.7	312
Selenium		0.90	U	0.90	1.0
Silicon		676	N X J	5.9	10.4
Silver		0.17	U	0.17	0.21
Vanadium		49.7	X	0.098	2.1
Zinc		44.2	X	0.41	1.0

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 10/21/2014 1919
Prep Date: 10/20/2014 0700

Analysis Batch: 280-249003
Prep Batch: 280-248528

Instrument ID: MT_026
Lab File ID: 26c102114.asc
Initial Weight/Volume: 1.06 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Cadmium		0.14	B	0.043	0.21
Nickel		12.2		0.13	4.2
Sodium		175		61.4	125

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 10/21/2014 1934
Prep Date: 10/21/2014 1515

Analysis Batch: 280-249102
Prep Batch: 280-248899

Instrument ID: MT_033
Lab File ID: 141021aa.txt
Initial Weight/Volume: 0.58 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0063	U	0.0063	0.019

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V126

Lab Sample ID: 280-61368-14
Client Matrix: Solid

% Moisture: 0.0

Date Sampled: 10/15/2014 1157
Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 10/21/2014 0133
Prep Date: 10/20/2014 0700

Analysis Batch: 280-248842
Prep Batch: 280-248528

11/22/14

Instrument ID: MT_026
Lab File ID: 26e102014.asc
Initial Weight/Volume: 1.19 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		118	X	1.3	4.2
Antimony		0.32	U J	0.32	0.50
Arsenic		0.55	U	0.55	0.84
Barium		1.2	X	0.064	0.42
Beryllium		0.028	U	0.028	0.17
Boron		0.82	U	0.82	1.7
Calcium		24.6	B X	11.8	42.0
Chromium		0.099	B X	0.049	0.17
Cobalt		0.084	U X	0.084	0.84
Copper		0.22	B X	0.18	0.84
Iron		177	X	3.2	4.2
Lead		0.23	U	0.23	0.42
Magnesium		12.3	B X	3.1	16.8
Manganese		2.8	X	0.084	0.84
Molybdenum		0.22	U	0.22	1.7
Potassium		36.0	B	34.5	252
Selenium		0.72	U J	0.72	0.84
Silicon		98.8	N X J	4.8	8.4
Silver		0.16	B C UJ	0.13	0.17
Vanadium		0.17	B X	0.079	1.7
Zinc		0.92	C X U	0.33	0.84

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 10/21/2014 1921
Prep Date: 10/20/2014 0700

Analysis Batch: 280-249003
Prep Batch: 280-248528

Instrument ID: MT_026
Lab File ID: 26c102114.asc
Initial Weight/Volume: 1.19 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Cadmium		0.034	U	0.034	0.17
Nickel		0.10	U	0.10	3.4
Sodium		49.6	U	49.6	101

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 10/21/2014 1936
Prep Date: 10/21/2014 1515

Analysis Batch: 280-249102
Prep Batch: 280-248899

Instrument ID: MT_033
Lab File ID: 141021aa.txt
Initial Weight/Volume: 0.56 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0059	U	0.0059	0.018

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-61368-1

SDG #: JP0872
SAF#: RC-075

Date SDG Closed: October 17, 2014
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V113	280-61368-1	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V114	280-61368-2	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V115	280-61368-3	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V116	280-61368-4	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V117	280-61368-5	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V118	280-61368-6	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V119	280-61368-7	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V120	280-61368-8	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V121	280-61368-9	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V122	280-61368-10	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V123	280-61368-11	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V124	280-61368-12	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V125	280-61368-13	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V126	280-61368-14	6010/7471	6010B/7471A

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 10/17/2014 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.5° C and 1.0° C.

GC SEMIVOLATILES - SW846 8082 - PCBs
No anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
C10-C36 is present in the method blank associated with batch 280-248804 at a level greater than half the reporting limit. As no detectable concentrations of C10-C36 are present in the associated samples at a level greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

Low levels of C10-C28 are present in the method blank associated with batch 280-248804. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

No other anomalies were encountered.

HPLC - SW846 8310 - PAHs

The RPD between the primary and confirmation columns exceeded 40% for Benzo[a]pyrene and Benzo[b]fluoranthene in sample J1V124. The lower of the two values has been reported, as matrix interference is evident on both columns. The results have been flagged with an "X".

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A

Serial dilution of a digestate in batch 280-248528 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Due to matrix interference, samples J1V113, J1V114, J1V118, J1V123 and J1V124 required 2X dilutions prior to the analysis of Beryllium. The reporting limits have been adjusted relative to the dilutions required.

Iron, a common laboratory contaminant, is present at a level greater than the reporting limit in the method blank associated with batch 280-248528. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

Silver is present in the method blank associated with batch 280-248528 at 0.163 mg/kg, which is greater than half the project specific reporting limit (PSRL) of 0.2 mg/kg. TestAmerica's practical quantitation limit (PQL) for Silver is 1 mg/kg. The laboratory cannot maintain system cleanliness at this low level; therefore, corrective action is not initiated. It can be noted that the concentration found in the method blank is less than half of the laboratory standard PQL, and associated sample results were either non-detect or less than the reporting limit.

Zinc is present in the method blank associated with batch 280-248528 at 0.745 mg/kg, which is greater than half the project specific reporting limit (PSRL) of 1 mg/kg. TestAmerica's practical quantitation limit (PQL) for Zinc is 3 mg/kg. The laboratory cannot maintain system cleanliness at this low level; therefore, corrective action is not initiated. It can be noted that the concentration found in the method blank is less than half of the laboratory standard PQL, and with the exception of 'blank' sample J1V126, the associated sample amounts are twenty times greater than the method blank concentration.

Low levels of Aluminum are present in the method blank associated with batch 280-248528. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

Silicon was recovered outside the control limits, biased low, in the LCS associated with batch 280-248528 and in the Matrix Spike performed on sample J1V113 in batch 280-248528. The associated sample results have been flagged "N". Silicon is a poor performer and has a history of reacting inconsistently. Data are reported as is.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1V113; therefore, control limits are not applicable.

No other anomalies were encountered.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-454

Collector: H. Weber	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-81, Verification, excavation		SAF No.: RC-075
Ice Chest No.: RCC-07-013	Field Logbook No.: EL-1662-03	COA: 000D812000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131274		Bill of Lading/Air Bill No.: See OSRC

Price Code: 7 days — Data Turnaround: 8B

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage: None 10-15-14 CMB cool 4C

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis
				Cool 4C	G/P	1	250mL	See Item (1) in Special Instructions
				Cool 4C	aG	1	125mL	TPH-Diesel Range - WTPH-D +
				Cool 4C	aG	1	250mL	PAHs - 8310
				Cool 4C	aG	1	250mL	PCBs - 8082
J1V113	SOIL	10/15/14	1252	X	X	X	X	
J1V114	SOIL	10/15/14	1242	X	X	X	X	
J1V115	SOIL	10/15/14	1248	X	X	X	X	
J1V116	SOIL	10/15/14	1232	X	X	X	X	
J1V117	SOIL	10/15/14	1238	X	X	X	X	

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Heather Weber / [signature]	10/15/14 1313	C. Martinez / C. Martinez	10/15/14 1313
C. Martinez / C. Martinez	10/15/14 1545	C. Bingham [signature]	10-15-14 1545
C. Bingham [signature]	10-15-14 1550	1060 Battelle, Fridge #1A	10-15-14 1550
1060 Battelle, Fridge #1A	10-16-14 0730	C. Bingham [signature]	10-16-14 0730
C. Bingham [signature] WCH	10-16-14 0735	Fed Ex	
		[signature]	10/17/14 9:00

FINAL SAMPLE DISPOSITION: Disposal Method — Disposed By — Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV) (Mercury).

1.0, 0.5 IRG of = 0.0
Tested by MP 10/17/14

REVIEWED BY K. Weaver DATE 10-16-14

JP0872

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-454

Collector: H. Weber	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-81, Verification, excavation		SAF No.: RC-075
Price Code: 7 days 8B	Data Turnaround		
Ice Chest No.: KCC-07-013	Field Logbook No.: EL-1662-03	COA: 000D812000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: 131274		Bill of Lading/Air Bill No.: See QSPC

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

None 10-15-14 CMB

Cool 4C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C								
Type of Container	G/P	aG	aG	aG								
No. of Container(s)	1	1	1	1								
Volume	250mL	125mL	250mL	250mL								
Sample Analysis	See item (1) in Special Instructions	TPH-Diesel Range - WTPH-D +	PAHs - 8310	PCBs - 8082								

Sample No.	Matrix	Sample Date	Sample Time										
J1V118	SOIL	10/15/14	1223	X	X	X	X						
J1V119	SOIL	10/15/14	1228	X	X	X	X						
J1V120	SOIL	10/15/14	1213	X	X	X	X						
J1V121	SOIL	10/15/14	1218	X	X	X	X						
J1V122	SOIL	10/15/14	1202	X	X	X	X						

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Heather Weber / [illegible]	10/15/14 1313	[illegible] / cmatting	10/15/14 1313
[illegible] / cmatting	10/15/14 1545	C. Bingham	10-15-14 1549
C. Bingham	10-15-14 1550	1060 Battelle, fridge #1A	10-15-14 1550
1060 Battelle, fridge #1A	10-16-14 0730	C. Bingham	10-16-14 0730
C. Bingham	10-16-14 0735	fed Ex	
			10/17/14 9:00

FINAL SAMPLE DISPOSITION — Disposal Method: — Disposed By: — Date/Time:

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV) (Mercury)

REVIEWED BY K. Woodmansee DATE 10-16-14

JP0872

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-454 | Page 3 of 3

Collector: H. Weber	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-81, Verification, excavation		SAF No.: RC-075
Ice Chest No.: RCC-07-013	Field Logbook No.: EL-1662-03	COA: 000D812000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131274		Bill of Lading/Air Bill No.: See OSPC

Price Code: 7 days 8B | Data Turnaround

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage: None 10-15-14 CMB; Cool 4C

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis
				Cool 4C	G/P	1	250mL	See Item (1) in Special Instructions
				Cool 4C	aG	1	125mL	TPH-Diesel Range - WTPH-D +
				Cool 4C	aG	1	250mL	PAHs - 8310
				Cool 4C	aG	1	250mL	PCBs - 8082
J1V123	SOIL	10/15/14	1209	X	X	X	X	
J1V124	SOIL	10/15/14	1308	X	X	X	X	
J1V125	SOIL	10/15/14	1202	X	X	X	X	
J1V126	SOIL	10/15/14	1157	X	n/a	n/a	n/a	

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Heather Weber / [illegible]	10/15/14 1313	[illegible] / [illegible]	10/15/14 1313
[illegible] / [illegible]	10/15/14 1545	C. Bingham	10-15-14 1545
C. Bingham	10-15-14 1550	10160 Battelle, fridge #1A	10-15-14 1550
10160 Battelle, fridge #1A	10-16-14 0730	C. Bingham	10-16-14 0730
C. Bingham WCH	10-16-14 0735	fed Ex	
		[illegible]	10/17/14 9:00

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV) (Mercury)

REVIEWED BY K. Wood/Hanford DATE 10-16-14

JP0872

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-81			DATA PACKAGE: JP0972		
VALIDATOR: ECR		LAB: TAL		DATE: 11/21/14	
			SDG: JP0872		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J1V113	J1V114	J1V115	J1V116	J1V117	
J1V118	J1V119	J1V120	J1V121	J1V122	
J1V123	J1V124	J1V125	J1V126		
				Soil	

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

ICP interference checks acceptable? ..... Yes No N/A

ICV and CCV checks performed on all instruments? ..... Yes No N/A

ICV and CCV checks acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A
ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: Zinc - 26 - UJ
Silver - 21 22 - UJ
26

FB - 12 detects

4. ACCURACY (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A

Comments: LCS - Silicon (83%) - J all
antimony (67%) Silicon (177%) - J all

No PAS

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable?	Yes	No	N/A
Duplicate results acceptable?	Yes	No	N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes	No	N/A
MS/MSD standards expired? (Levels D, E)	Yes	No	N/A
Field duplicate RPD values acceptable?	Yes	No	N/A
Field split RPD values acceptable?	Yes	No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A

Comments: _____

22|25 -

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed?	Yes	No	N/A
ICP serial dilution %D values acceptable?	Yes	No	N/A
ICP post digestion spike required?	Yes	No	N/A
ICP post digestion spike values acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
Transcription/calculation errors?	Yes	No	N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

7. FURNACE AA QUALITY CONTROL (Levels D and E)

Duplicate injections performed as required? ..... Yes No N/A

Duplicate injection %RSD values acceptable? ..... Yes No N/A

Analytical spikes performed as required? ..... Yes No N/A

Analytical spike recoveries acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

MSA performed as required? ..... Yes No N/A

MSA results acceptable? ..... Yes No N/A

Transcription/calculation errors? ..... Yes No N/A

Comments:_____

8. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments:_____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:_____

_____

_____

_____

_____

_____

_____

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Method Blank - Batch: 280-248528

Method: 6010B
Preparation: 3050B

Lab Sample ID:	MB 280-248528/1-A	Analysis Batch:	280-248842	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-248528	Lab File ID:	26e102014.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.00 g
Analysis Date:	10/21/2014 0035	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	10/20/2014 0700				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Aluminum	2.10	B	1.6	5.0
Antimony	0.38	U	0.38	0.60
Arsenic	0.66	U	0.66	1.0
Barium	0.076	U	0.076	0.50
Beryllium	0.033	U	0.033	0.20
Boron	0.98	U	0.98	2.0
Calcium	14.1	U	14.1	50.0
Chromium	0.058	U	0.058	0.20
Cobalt	0.10	U	0.10	1.0
Copper	0.22	U	0.22	1.0
Iron	6.06		3.8	5.0
Lead	0.27	U	0.27	0.50
Magnesium	3.7	U	3.7	20.0
Manganese	0.10	U	0.10	1.0
Molybdenum	0.26	U	0.26	2.0
Potassium	41.0	U	41.0	300
Selenium	0.86	U	0.86	1.0
Silicon	5.7	U	5.7	10.0
Silver	0.163	B	0.16	0.20
Vanadium	0.094	U	0.094	2.0
Zinc	0.745	B	0.40	1.0

Method Blank - Batch: 280-248528

Method: 6010B
Preparation: 3050B

Lab Sample ID:	MB 280-248528/1-A	Analysis Batch:	280-249003	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-248528	Lab File ID:	26c102114.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.00 g
Analysis Date:	10/21/2014 1823	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	10/20/2014 0700				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Cadmium	0.041	U	0.041	0.20
Nickel	0.12	U	0.12	4.0
Sodium	59.0	U	59.0	120

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Lab Control Sample - Batch: 280-248528

Method: 6010B
Preparation: 3050B

Lab Sample ID:	LCS 280-248528/2-A	Analysis Batch:	280-248842	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-248528	Lab File ID:	26e102014.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.00 g
Analysis Date:	10/21/2014 0038	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	10/20/2014 0700				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	200	208.4	104	82 - 116	
Antimony	50.0	51.39	103	82 - 110	
Arsenic	100	94.61	95	85 - 110	
Barium	200	195.9	98	87 - 112	
Beryllium	5.00	4.91	98	84 - 114	
Boron	100	100.5	101	80 - 120	
Calcium	5000	5054	101	82 - 114	
Chromium	20.0	21.81	109	84 - 114	
Cobalt	50.0	48.65	97	87 - 110	
Copper	25.0	26.29	105	88 - 110	
Iron	100	108.0	108	87 - 120	
Lead	50.0	50.14	100	86 - 110	
Magnesium	5000	4689	94	90 - 110	
Manganese	50.0	49.71	99	88 - 110	
Molybdenum	100	107.8	108	86 - 110	
Potassium	5000	4910	98	89 - 110	
Selenium	200	213.4	107	83 - 110	
Silicon	1000	80.42	8	10 - 70	N
Silver	5.00	5.49	110	87 - 114	
Vanadium	50.0	50.54	101	88 - 110	
Zinc	50.0	48.55	97	76 - 114	

Lab Control Sample - Batch: 280-248528

Method: 6010B
Preparation: 3050B

Lab Sample ID:	LCS 280-248528/2-A	Analysis Batch:	280-249003	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-248528	Lab File ID:	26c102114.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.00 g
Analysis Date:	10/21/2014 1826	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	10/20/2014 0700				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Cadmium	10.0	10.89	109	87 - 110	
Nickel	50.0	53.33	107	87 - 110	
Sodium	5000	5535	111	90 - 112	

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Matrix Spike - Batch: 280-248528

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-61368-1	Analysis Batch:	280-248842	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-248528	Lab File ID:	26e102014.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.10 g
Analysis Date:	10/21/2014 0048	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	10/20/2014 0700				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	4540		189	5257	379	50 - 200	4
Antimony	0.37	U	47.3	31.55	67	20 - 200	
Arsenic	2.0		94.7	77.76	80	76 - 111	
Barium	38.5		189	205.3	88	52 - 159	
Boron	0.95	U	94.7	80.70	85	80 - 120	
Calcium	7970		4730	12430	94	43 - 165	
Chromium	3.6		18.9	21.70	95	70 - 200	
Cobalt	7.1		47.3	46.30	83	72 - 106	
Copper	13.8		23.7	35.21	90	37 - 187	
Iron	21600		94.7	22640	1143	70 - 200	4
Lead	2.8		47.3	42.71	84	70 - 200	
Magnesium	3370		4730	8021	98	64 - 145	
Manganese	248		47.3	291.0	92	40 - 200	4
Molybdenum	0.25	U	94.7	86.97	92	75 - 103	
Potassium	466		4730	4525	86	56 - 172	
Selenium	0.83	U	189	174.3	92	76 - 104	
Silicon	325		947	486.1	17	20 - 200	N
Silver	0.15	U	4.73	4.67	99	75 - 141	
Vanadium	51.7		47.3	96.96	96	50 - 169	
Zinc	35.4		47.3	73.70	81	70 - 200	

Matrix Spike - Batch: 280-248528

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-61368-1	Analysis Batch:	280-249003	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-248528	Lab File ID:	26c102114.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.10 g
Analysis Date:	10/21/2014 1836	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	10/20/2014 0700				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Cadmium	0.11	B	9.47	9.18	96	40 - 130	
Nickel	6.5		47.3	48.90	90	61 - 126	
Sodium	386		4730	5174	101	78 - 111	

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Matrix Spike - Batch: 280-248528

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-61368-1	Analysis Batch:	280-249003	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-248528	Lab File ID:	26c102114.asc
Dilution:	2.0	Leach Batch:	N/A	Initial Weight/Volume:	1.10 g
Analysis Date:	10/21/2014 1942	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	10/20/2014 0700				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Beryllium	0.064	U	4.73	4.11	87	72 - 105	

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Duplicate - Batch: 280-248528

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-61368-1	Analysis Batch:	280-248842	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-248528	Lab File ID:	26e102014.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.04 g
Analysis Date:	10/21/2014 0045	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	10/20/2014 0700				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Aluminum	4540		4086	11	40	
Antimony	0.37	U	0.38	NC	40	U
Arsenic	2.0		1.98	3	30	
Barium	38.5		42.62	10	30	
Boron	0.95	U	0.98	NC	30	U
Calcium	7970		6505	20	30	
Chromium	3.6		3.62	0.03	40	
Cobalt	7.1		7.16	2	30	
Copper	13.8		14.19	3	30	
Iron	21600		23280	8	40	
Lead	2.8		3.21	12	40	
Magnesium	3370		3429	2	30	
Manganese	248		257.1	4	40	
Molybdenum	0.25	U	0.26	NC	30	U
Potassium	466		452.2	3	40	
Selenium	0.83	U	0.86	NC	30	U
Silicon	325		323.8	0.4	40	N
Silver	0.15	U	0.16	NC	30	U
Vanadium	51.7		56.39	9	30	
Zinc	35.4		39.00	10	40	

Duplicate - Batch: 280-248528

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-61368-1	Analysis Batch:	280-249003	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-248528	Lab File ID:	26c102114.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.04 g
Analysis Date:	10/21/2014 1833	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	10/20/2014 0700				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Cadmium	0.11	B	0.110	3	30	B
Nickel	6.5		5.98	9	30	
Sodium	386		313.8	21	30	

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Duplicate - Batch: 280-248528

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-61368-1	Analysis Batch:	280-249003	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-248528	Lab File ID:	26c102114.asc
Dilution:	2.0	Leach Batch:	N/A	Initial Weight/Volume:	1.04 g
Analysis Date:	10/21/2014 1940	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	10/20/2014 0700				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Beryllium	0.064	U	0.066	NC	30	U

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Method Blank - Batch: 280-248899

Method: 7471A
Preparation: 7471A

Lab Sample ID:	MB 280-248899/1-A	Analysis Batch:	280-249102	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-248899	Lab File ID:	141021aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	.6 g
Analysis Date:	10/21/2014 1852	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	10/21/2014 1515				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Mercury	0.0055	U	0.0055	0.017

Lab Control Sample - Batch: 280-248899

Method: 7471A
Preparation: 7471A

Lab Sample ID:	LCS 280-248899/2-A	Analysis Batch:	280-249102	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-248899	Lab File ID:	141021aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	.6 g
Analysis Date:	10/21/2014 1855	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	10/21/2014 1515				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.417	0.434	104	87 - 111	

Matrix Spike - Batch: 280-248899

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-61368-1	Analysis Batch:	280-249102	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-248899	Lab File ID:	141021aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.56 g
Analysis Date:	10/21/2014 1902	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	10/21/2014 1515				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.0050	U	0.465	0.489	105	87 - 111	

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Duplicate - Batch: 280-248899

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-61368-1	Analysis Batch:	280-249102	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-248899	Lab File ID:	141021aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.51 g
Analysis Date:	10/21/2014 1859	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	10/21/2014 1515				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Mercury	0.0050	U	0.0068	NC	20	U

Date: 24 November 2014
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 100-D-81
Subject: PCB - Data Package No. JP0872-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0872 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1V113	10/15/14	Soil	C	See note 1
J1V114	10/15/14	Soil	C	See note 1
J1V115	10/15/14	Soil	C	See note 1
J1V116	10/15/14	Soil	C	See note 1
J1V117	10/15/14	Soil	C	See note 1
J1V118	10/15/14	Soil	C	See note 1
J1V119	10/15/14	Soil	C	See note 1
J1V120	10/15/14	Soil	C	See note 1
J1V121	10/15/14	Soil	C	See note 1
J1V122	10/15/14	Soil	C	See note 1
J1V123	10/15/14	Soil	C	See note 1
J1V124	10/15/14	Soil	C	See note 1
J1V125	10/15/14	Soil	C	See note 1

1 – PCBs by 8082.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY OBJECTIVES

- **Holding Times**

Holding times are not applicable for PCB analysis.

- **Method Blank**

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the

unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All precision results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1V122/J1V125) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data Package No. JP0872 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

PCB DATA QUALIFICATION SUMMARY*

SDG: JP0872	REVIEWER: ELR	Project: 100-D-81	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V113

Lab Sample ID: 280-61368-1
Client Matrix: Solid

% Moisture: 4.0

Date Sampled: 10/15/2014 1252
Date Received: 10/17/2014 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-248859	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-248723	Initial Weight/Volume:	31.1 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	10/21/2014 1448			Injection Volume:	1 uL
Prep Date:	10/20/2014 1407			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.1	U	8.1	17
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.7	U	4.7	10
Aroclor 1248		4.7	U	4.7	10
Aroclor 1254		2.6	U	2.6	10
Aroclor 1260		2.6	U	2.6	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	79		59 - 130
Tetrachloro-m-xylene	74		53 - 128

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V114

Lab Sample ID: 280-61368-2
Client Matrix: Solid

% Moisture: 4.3

Date Sampled: 10/15/2014 1242
Date Received: 10/17/2014 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-248859	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-248723	Initial Weight/Volume:	30.9 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	10/21/2014 1512			Injection Volume:	1 uL
Prep Date:	10/20/2014 1407			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.1	U	8.1	17
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.7	U	4.7	10
Aroclor 1248		4.7	U	4.7	10
Aroclor 1254		2.6	U	2.6	10
Aroclor 1260		2.6	U	2.6	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	76		59 - 130
Tetrachloro-m-xylene	73		53 - 128

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V115

Lab Sample ID: 280-61368-3
Client Matrix: Solid

% Moisture: 3.6

Date Sampled: 10/15/2014 1248
Date Received: 10/17/2014 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-248859	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-248723	Initial Weight/Volume:	30.0 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	10/21/2014 1623			Injection Volume:	1 uL
Prep Date:	10/20/2014 1407			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.9	U	2.9	10
Aroclor 1221		8.3	U	8.3	17
Aroclor 1232		2.1	U	2.1	10
Aroclor 1242		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	75		59 - 130
Tetrachloro-m-xylene	71		53 - 128

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V116

Lab Sample ID: 280-61368-4
Client Matrix: Solid

% Moisture: 5.9

Date Sampled: 10/15/2014 1232
Date Received: 10/17/2014 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-248859	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-248723	Initial Weight/Volume:	30.4 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	10/21/2014 1646			Injection Volume:	1 uL
Prep Date:	10/20/2014 1407			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.9	U	2.9	10
Aroclor 1221		8.4	U	8.4	17
Aroclor 1232		2.1	U	2.1	10
Aroclor 1242		4.9	U	4.9	10
Aroclor 1248		4.9	U	4.9	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	75		59 - 130
Tetrachloro-m-xylene	71		53 - 128

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V117

Lab Sample ID: 280-61368-5
Client Matrix: Solid

% Moisture: 3.5

Date Sampled: 10/15/2014 1238
Date Received: 10/17/2014 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-248859	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-248723	Initial Weight/Volume:	31.0 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	10/21/2014 1710			Injection Volume:	1 uL
Prep Date:	10/20/2014 1407			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.0	U	8.0	17
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.7	U	4.7	10
Aroclor 1248		4.7	U	4.7	10
Aroclor 1254		2.6	U	2.6	10
Aroclor 1260		2.6	U	2.6	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	79		59 - 130
Tetrachloro-m-xylene	75		53 - 128

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V118

Lab Sample ID: 280-61368-6
Client Matrix: Solid

% Moisture: 3.1

Date Sampled: 10/15/2014 1223
Date Received: 10/17/2014 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-248859	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-248723	Initial Weight/Volume:	31.0 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	10/21/2014 1734			Injection Volume:	1 uL
Prep Date:	10/20/2014 1407			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.0	U	8.0	16
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.7	U	4.7	10
Aroclor 1248		4.7	U	4.7	10
Aroclor 1254		2.6	U	2.6	10
Aroclor 1260		2.6	U	2.6	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	76		59 - 130
Tetrachloro-m-xylene	73		53 - 128

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V119

Lab Sample ID: 280-61368-7
Client Matrix: Solid

% Moisture: 4.0

Date Sampled: 10/15/2014 1228
Date Received: 10/17/2014 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-248859	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-248723	Initial Weight/Volume:	30.5 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	10/21/2014 1821			Injection Volume:	1 uL
Prep Date:	10/20/2014 1407			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.2	U	8.2	17
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	78		59 - 130
Tetrachloro-m-xylene	73		53 - 128

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V120

Lab Sample ID: 280-61368-8
Client Matrix: Solid

% Moisture: 5.5

Date Sampled: 10/15/2014 1213
Date Received: 10/17/2014 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-248859	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-248723	Initial Weight/Volume:	30.6 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	10/21/2014 1844			Injection Volume:	1 uL
Prep Date:	10/20/2014 1407			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.9	U	2.9	10
Aroclor 1221		8.3	U	8.3	17
Aroclor 1232		2.1	U	2.1	10
Aroclor 1242		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	73		59 - 130
Tetrachloro-m-xylene	70		53 - 128

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: **J1V121**

Lab Sample ID: 280-61368-9
Client Matrix: Solid
% Moisture: 5.0

Date Sampled: 10/15/2014 1218
Date Received: 10/17/2014 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-248859	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-248723	Initial Weight/Volume:	30.7 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	10/21/2014 1908			Injection Volume:	1 uL
Prep Date:	10/20/2014 1407			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.2	U	8.2	17
Aroclor 1232		2.1	U	2.1	10
Aroclor 1242		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	76		59 - 130
Tetrachloro-m-xylene	71		53 - 128

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V122

Lab Sample ID: 280-61368-10
Client Matrix: Solid

% Moisture: 3.7

Date Sampled: 10/15/2014 1202
Date Received: 10/17/2014 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-248859	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-248723	Initial Weight/Volume:	31.2 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	10/21/2014 1931			Injection Volume:	1 uL
Prep Date:	10/20/2014 1407			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.0	U	8.0	16
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.7	U	4.7	10
Aroclor 1248		4.7	U	4.7	10
Aroclor 1254		2.6	U	2.6	10
Aroclor 1260		2.6	U	2.6	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	73		59 - 130
Tetrachloro-m-xylene	69		53 - 128

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: **J1V123**

Lab Sample ID: 280-61368-11
Client Matrix: Solid % Moisture: 3.2

Date Sampled: 10/15/2014 1209
Date Received: 10/17/2014 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-248859	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-248723	Initial Weight/Volume:	30.7 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	10/21/2014 1955			Injection Volume:	1 uL
Prep Date:	10/20/2014 1407			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.1	U	8.1	17
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.7	U	4.7	10
Aroclor 1248		4.7	U	4.7	10
Aroclor 1254		2.6	U	2.6	10
Aroclor 1260		2.6	U	2.6	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	74		59 - 130
Tetrachloro-m-xylene	68		53 - 128

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V124

Lab Sample ID: 280-61368-12
Client Matrix: Solid

% Moisture: 5.3

Date Sampled: 10/15/2014 1308
Date Received: 10/17/2014 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-248859	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-248723	Initial Weight/Volume:	30.3 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	10/21/2014 2019			Injection Volume:	1 uL
Prep Date:	10/20/2014 1407			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.9	U	2.9	10
Aroclor 1221		8.4	U	8.4	17
Aroclor 1232		2.1	U	2.1	10
Aroclor 1242		4.9	U	4.9	10
Aroclor 1248		4.9	U	4.9	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	72		59 - 130
Tetrachloro-m-xylene	67		53 - 128

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V125

Lab Sample ID: 280-61368-13
Client Matrix: Solid

% Moisture: 9.4

Date Sampled: 10/15/2014 1202
Date Received: 10/17/2014 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-248859	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-248723	Initial Weight/Volume:	30.2 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	10/21/2014 2042			Injection Volume:	1 uL
Prep Date:	10/20/2014 1407			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		3.0	U	3.0	11
Aroclor 1221		8.8	U	8.8	18
Aroclor 1232		2.2	U	2.2	11
Aroclor 1242		5.1	U	5.1	11
Aroclor 1248		5.1	U	5.1	11
Aroclor 1254		2.9	U	2.9	11
Aroclor 1260		2.9	U	2.9	11

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	76		59 - 130
Tetrachloro-m-xylene	67		53 - 128

11/22/14

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-61368-1

SDG #: JP0872
SAF#: RC-075

Date SDG Closed: October 17, 2014
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V113	280-61368-1	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V114	280-61368-2	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V115	280-61368-3	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V116	280-61368-4	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V117	280-61368-5	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V118	280-61368-6	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V119	280-61368-7	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V120	280-61368-8	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V121	280-61368-9	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V122	280-61368-10	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V123	280-61368-11	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V124	280-61368-12	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V125	280-61368-13	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V126	280-61368-14	6010/7471	6010B/7471A

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 10/17/2014 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.5° C and 1.0° C.

GC SEMIVOLATILES - SW846 8082 - PCBs
No anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
C10-C36 is present in the method blank associated with batch 280-248804 at a level greater than half the reporting limit. As no detectable concentrations of C10-C36 are present in the associated samples at a level greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

Low levels of C10-C28 are present in the method blank associated with batch 280-248804. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

No other anomalies were encountered.

HPLC - SW846 8310 - PAHs
The RPD between the primary and confirmation columns exceeded 40% for Benzo[a]pyrene and Benzo[b]fluoranthene in sample J1V124. The lower of the two values has been reported, as matrix interference is evident on both columns. The results have been flagged with an "X".

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-248528 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Due to matrix interference, samples J1V113, J1V114, J1V118, J1V123 and J1V124 required 2X dilutions prior to the analysis of Beryllium. The reporting limits have been adjusted relative to the dilutions required.

Iron, a common laboratory contaminant, is present at a level greater than the reporting limit in the method blank associated with batch 280-248528. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

Silver is present in the method blank associated with batch 280-248528 at 0.163 mg/kg, which is greater than half the project specific reporting limit (PSRL) of 0.2 mg/kg. TestAmerica's practical quantitation limit (PQL) for Silver is 1 mg/kg. The laboratory cannot maintain system cleanliness at this low level; therefore, corrective action is not initiated. It can be noted that the concentration found in the method blank is less than half of the laboratory standard PQL, and associated sample results were either non-detect or less than the reporting limit.

Zinc is present in the method blank associated with batch 280-248528 at 0.745 mg/kg, which is greater than half the project specific reporting limit (PSRL) of 1 mg/kg. TestAmerica's practical quantitation limit (PQL) for Zinc is 3 mg/kg. The laboratory cannot maintain system cleanliness at this low level; therefore, corrective action is not initiated. It can be noted that the concentration found in the method blank is less than half of the laboratory standard PQL, and with the exception of 'blank' sample J1V126, the associated sample amounts are twenty times greater than the method blank concentration.

Low levels of Aluminum are present in the method blank associated with batch 280-248528. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

Silicon was recovered outside the control limits, biased low, in the LCS associated with batch 280-248528 and in the Matrix Spike performed on sample J1V113 in batch 280-248528. The associated sample results have been flagged "N". Silicon is a poor performer and has a history of reacting inconsistently. Data are reported as is.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1V113; therefore, control limits are not applicable.

No other anomalies were encountered.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-075-454	Page 1 of 3

Collector: H. Weber	Company Contact: Joan Kessner — Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 7 days — Data Turnaround: 8B
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-81, Verification, excavation	SAF No.: RC-075	
Ice Chest No.: RCC-07-013	Field Logbook No.: EL-1662-03 — COA: 000D812000	Method of Shipment: Commercial Carrier \ Fed Ex	
Shipped To: TestAmerica Denver	Offsite Property No.: A131274	Bill of Lading/Air Bill No.: See OSPC	

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS
None

Special Handling and/or Storage
None 10-15-14 CMB cool 4C

Preservation				Cool 4C	Cool 4C	Cool 4C	Cool 4C
Type of Container				G/P	aG	aG	aG
No. of Container(s)				1	1	1	1
Volume				250mL	125mL	250mL	250mL
Sample Analysis				See item (1) in Special Instructions	TPH-Diesel Range - WTPH-D +	PAHs - 8310	PCBs - 8082
Sample No.	**Matrix**	**Sample Date**	**Sample Time**				
J1V113	SOIL	10/15/14	1252	X	X	X	X
J1V114	SOIL	10/15/14	1242	X	X	X	X
J1V115	SOIL	10/15/14	1248	X	X	X	X
J1V116	SOIL	10/15/14	1232	X	X	X	X
J1V117	SOIL	10/15/14	1238	X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Heather Weber / [signature]	10/15/14 1313	C. Martinez / C. Martinez	10/15/14 1313
C. Martinez / C. Martinez	10/15/14 1545	C. Bingham [signature]	10-15-14 1545
C. Bingham [signature]	10-15-14 1550	1060 Battelle, fridge #1A	10-15-14 1550
1060 Battelle, fridge #1A	10-16-14 0730	C. Bingham [signature]	10-16-14 0730
C. Bingham [signature] WCH	10-16-14 0735	Fed Ex	
		[signature]	10/17/14 9:00

SPECIAL INSTRUCTIONS
(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

1.0, 0.5 IR6 CF=0.0
Tracked by MP 10/17/14

REVIEWED BY K. Vianemal
DATE 10-16-14

JP0872

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-454 | Page 2 of 3

Collector: H. Weber	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-81, Verification, excavation		SAF No.: RC-075
Ice Chest No.: KCC-07-013	Field Logbook No.: EL-1662-03	COA: 000D812000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: 1131274		Bill of Lading/Air Bill No.: See OSPC

Price Code: 7 days 8B | Data Turnaround

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage: None 10-15-14 CMB; cool 4C

Page 1 of 2

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis: See Item (1) in Special Instructions	Sample Analysis: TPH-Diesel Range - WTPH-D+	Sample Analysis: PAHs - 8310	Sample Analysis: PCBs - 8082
				Cool 4C	G/P	1	250mL				
				Cool 4C	aG	1	125mL				
				Cool 4C	aG	1	250mL				
				Cool 4C	aG	1	250mL				
J1V118	SOIL	10/15/14	1223					X	X	X	X
J1V119	SOIL	10/15/14	1228					X	X	X	X
J1V120	SOIL	10/15/14	1213					X	X	X	X
J1V121	SOIL	10/15/14	1218					X	X	X	X
J1V122	SOIL	10/15/14	1202					X	X	X	X

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Heather Weber / DOE	10/15/14 1313	S. Martinez / S. Martinez	10/15/14 1313
S. Martinez / S. Martinez	10/15/14 1545	C. Bingham	10-15-14 1545
C. Bingham	10-15-14 1550	1060 Battelle, Fndg #1A	10-15-14 1550
1060 Battelle, Fndg #1A	10-16-14 0730	C. Bingham	10-16-14 0730
C. Bingham MH	10-16-14 0735	Fed Ex	
			10/17/14 9:00

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV) (Mercury)

REVIEWED BY K. Woodmansee DATE 10-16-14

JP0872

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-454

Collector: H. Weber	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-81, Verification, excavation		SAF No.: RC-075
Ice Chest No.: RCC-07-013	Field Logbook No.: EL-1862-03	COA: 000D812000	Method of Shipment: Commercial Carrier — Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131274		Bill of Lading/Air Bill No.: See OSPC

Price Code: 7 days 8B

Data Turnaround

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage: ~~None~~ 10-15-14 CMB Cool 4C

Page 1 of 1

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis
				Cool 4C	G/P	1	250mL	See Item (1) in Special Instructions
				Cool 4C	aG	1	125mL	TPH-Diesel Range - WTPH-D +
				Cool 4C	aG	1	250mL	PAHs - 8310
				Cool 4C	aG	1	250mL	PCBs - 8082
J1V123	SOIL	10/15/14	1209	X	X	X	X	
J1V124	SOIL	10/15/14	1308	X	X	X	X	
J1V125	SOIL	10/15/14	1202	X	X	X	X	
J1V126	SOIL	10/15/14	1157	X	n/a	n/a	n/a	

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Heather Weber / [illegible]	10/15/14 1313	[illegible] / S. Martinez	10/15/14 1313
S. Martinez / S. Martinez	10/15/14 1545	C. Bingham	10-15-14 1545
C. Bingham	10-15-14 1550	1060 Battelle, fridge #114	10-15-14 1550
1060 Battelle, fridge #114	10-16-14 0730	C. Bingham	10-16-14 0730
C. Bingham WCH	10-16-14 0735	Fed Ex	
		[illegible]	10/17/14 9:00

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV) (Mercury)

REVIEWED BY K. Wood Vincent DATE 10-16-14

JP0872

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — Date/Time

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-81			DATA PACKAGE: JP0872		
VALIDATOR: ECR		LAB: TAL		DATE: 11/21/14	
			SDG: JP0872		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J1V113	J1V114	J1V115	J1V116	J1V117	
J1V118	J1V119	J1V120	J1V121	J1V122	
J1V123	J1V124	J1V125			
Soil					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations acceptable? ..... Yes No (N/A)

Continuing calibrations acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

DDT and endrin breakdowns acceptable? ..... Yes No (N/A)

Comments: _____

PCB DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: no FB

4. ACCURACY (Levels C, D, and E)

Surrogates analyzed? ..... Yes No N/A
Surrogate recoveries acceptable? ..... Yes No N/A
Surrogates traceable? (Levels D, E) ..... Yes No N/A
Surrogates expired? (Levels D, E) ..... Yes No N/A
MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A

Comments:

no PAT

PCB DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A
Duplicate results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
Field duplicate RPD values acceptable? ..... Yes No N/A
Field split RPD values acceptable? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

6. SYSTEM PERFORMANCE (Levels D and E)

Chromatographic performance acceptable? ..... Yes No N/A
Positive results resolved acceptably? ..... Yes No N/A

Comments: _____

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A
Sample holding times acceptable? ..... Yes No N/A

Comments: _____

PCB DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E)	Yes	No	N/A
Compound quantitation acceptable? (Levels D, E)	Yes	No	N/A
Results reported for all requested analyses?	Yes	No	N/A
Results supported in the raw data? (Levels D, E)	Yes	No	N/A
Samples properly prepared? (Levels D, E)	Yes	No	N/A
Detection limits meet RDL?	Yes	No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A

Comments:_____

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other absorbent) cleanup performed?	Yes	No	N/A
Lot check performed?	Yes	No	N/A
Check recoveries acceptable?	Yes	No	N/A
GPC cleanup performed?	Yes	No	N/A
GPC check performed?	Yes	No	N/A
GPC check recoveries acceptable?	Yes	No	N/A
GPC calibration performed?	Yes	No	N/A
GPC calibration check performed?	Yes	No	N/A
GPC calibration check retention times acceptable?	Yes	No	N/A
Check/calibration materials traceable?	Yes	No	N/A
Check/calibration materials Expired?	Yes	No	N/A
Analytical batch QC given similar cleanup?	Yes	No	N/A
Transcription/Calculation Errors?	Yes	No	N/A

Comments:_____

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Method Blank - Batch: 280-248723

Method: 8082
Preparation: 3550C

Lab Sample ID:	MB 280-248723/1-A	Analysis Batch:	280-248859	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-248723	Lab File ID:	10211411.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.6 g
Analysis Date:	10/21/2014 1401	Units:	ug/Kg	Final Weight/Volume:	5 mL
Prep Date:	10/20/2014 1407			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Result	Qual	MDL	RL
Aroclor 1016	2.6	U	2.6	9.5
Aroclor 1221	7.6	U	7.6	16
Aroclor 1232	1.9	U	1.9	9.5
Aroclor 1242	4.4	U	4.4	9.5
Aroclor 1248	4.4	U	4.4	9.5
Aroclor 1254	2.5	U	2.5	9.5
Aroclor 1260	2.5	U	2.5	9.5

Surrogate	% Rec	Acceptance Limits
Decachlorobiphenyl	79	59 - 130
Tetrachloro-m-xylene	68	53 - 128

Lab Control Sample - Batch: 280-248723

Method: 8082
Preparation: 3550C

Lab Sample ID:	LCS 280-248723/2-A	Analysis Batch:	280-248859	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-248723	Lab File ID:	10211412.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.7 g
Analysis Date:	10/21/2014 1425	Units:	ug/Kg	Final Weight/Volume:	5 mL
Prep Date:	10/20/2014 1407			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aroclor 1016	31.5	25.8	82	54 - 132	
Aroclor 1260	31.5	27.6	87	62 - 129	

Surrogate	% Rec	Acceptance Limits
Decachlorobiphenyl	78	59 - 130
Tetrachloro-m-xylene	73	53 - 128

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-248723

Method: 8082
Preparation: 3550C

MS Lab Sample ID:	280-61368-2	Analysis Batch:	280-248859	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-248723	Lab File ID:	10211415.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.8 g
Analysis Date:	10/21/2014 1536			Final Weight/Volume:	5 mL
Prep Date:	10/20/2014 1407			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

MSD Lab Sample ID:	280-61368-2	Analysis Batch:	280-248859	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-248723	Lab File ID:	10211416.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.4 g
Analysis Date:	10/21/2014 1559			Final Weight/Volume:	5 mL
Prep Date:	10/20/2014 1407			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Aroclor 1016	88	87	54 - 132	0	26		
Aroclor 1260	89	90	62 - 129	3	26		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
Decachlorobiphenyl	79	78	59 - 130
Tetrachloro-m-xylene	79	76	53 - 128

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-248723

Method: 8082
Preparation: 3550C

MS Lab Sample ID:	280-61368-2	Units:	ug/Kg	MSD Lab Sample ID:	280-61368-2
Client Matrix:	Solid			Client Matrix:	Solid
Dilution:	1.0			Dilution:	1.0
Analysis Date:	10/21/2014 1536			Analysis Date:	10/21/2014 1559
Prep Date:	10/20/2014 1407			Prep Date:	10/20/2014 1407
Leach Date:	N/A			Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Aroclor 1016	2.8	U	33.9	34.4	29.8	29.9
Aroclor 1260	2.6	U	33.9	34.4	30.1	30.9

Date: 24 November 2014
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 100-D-81
Subject: Polyaromatic Hydrocarbon - Data Package No. JP0872-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0872 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1V113	10/15/14	Soil	C	See note 1
J1V114	10/15/14	Soil	C	See note 1
J1V115	10/15/14	Soil	C	See note 1
J1V116	10/15/14	Soil	C	See note 1
J1V117	10/15/14	Soil	C	See note 1
J1V118	10/15/14	Soil	C	See note 1
J1V119	10/15/14	Soil	C	See note 1
J1V120	10/15/14	Soil	C	See note 1
J1V121	10/15/14	Soil	C	See note 1
J1V122	10/15/14	Soil	C	See note 1
J1V123	10/15/14	Soil	C	See note 1
J1V124	10/15/14	Soil	C	See note 1
J1V125	10/15/14	Soil	C	See note 1

1 – Polyaromatic hydrocarbons by 8310.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

- **Holding Times**

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blanks**

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

All method blank results were acceptable.

Field (equipment) Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in

duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All laboratory results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1V122/J1V125) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field

duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. JP0872 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

POLYAROMATIC HYDROCARBON DATA QUALIFICATION SUMMARY*

SDG: JP0872	REVIEWER: ELR	Project: 100-D-81	PAGE_1_OF_1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: **J1V113**

Lab Sample ID: 280-61368-1
Client Matrix: Solid % Moisture: 4.0

Date Sampled: 10/15/2014 1252
Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-248858	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-248659	Initial Weight/Volume:	30.1 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	10/21/2014 1417			Injection Volume:	20 uL
Prep Date:	10/20/2014 1259			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.3	U	9.3	100
Anthracene		3.2	U	3.2	21
Benzo[a]anthracene		3.3	U	3.3	16
Benzo[a]pyrene		6.7	U	6.7	16
Benzo[b]fluoranthene		4.4	U	4.4	16
Benzo[g,h,i]perylene		7.5	U	7.5	31
Benzo[k]fluoranthene		4.1	U	4.1	16
Chrysene		5.0	U	5.0	42
Dibenzo(a,h)anthracene		11	U	11	31
Fluoranthene		13	U	13	42
Fluorene		5.5	U	5.5	31
Indeno[1,2,3-cd]pyrene		12	U	12	31
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	42
Pyrene		12	U	12	42

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	88		72 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V114

Lab Sample ID: 280-61368-2
Client Matrix: Solid

% Moisture: 4.3

Date Sampled: 10/15/2014 1242
Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-248858	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-248659	Initial Weight/Volume:	31.0 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	10/21/2014 1549			Injection Volume:	20 uL
Prep Date:	10/20/2014 1259			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.1	U	9.1	100
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.5	U	6.5	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.3	U	7.3	30
Benzo[k]fluoranthene		4.0	U	4.0	15
Chrysene		4.9	U	4.9	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	40
Fluorene		5.3	U	5.3	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	89		72 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V115

Lab Sample ID: 280-61368-3
Client Matrix: Solid

% Moisture: 3.6

Date Sampled: 10/15/2014 1248
Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-248858	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-248659	Initial Weight/Volume:	30.0 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	10/21/2014 1620			Injection Volume:	20 uL
Prep Date:	10/20/2014 1259			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.3	U	9.3	100
Anthracene		3.2	U	3.2	21
Benzo[a]anthracene		3.3	U	3.3	16
Benzo[a]pyrene		6.7	U	6.7	16
Benzo[b]fluoranthene		4.4	U	4.4	16
Benzo[g,h,i]perylene		7.5	U	7.5	31
Benzo[k]fluoranthene		4.1	U	4.1	16
Chrysene		5.0	U	5.0	42
Dibenzo(a,h)anthracene		11	U	11	31
Fluoranthene		13	U	13	42
Fluorene		5.5	U	5.5	31
Indeno[1,2,3-cd]pyrene		12	U	12	31
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	42
Pyrene		12	U	12	42

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	85		72 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V116

Lab Sample ID: 280-61368-4
Client Matrix: Solid

% Moisture: 5.9

Date Sampled: 10/15/2014 1232
Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-248858	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-248659	Initial Weight/Volume:	30.5 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	10/21/2014 1650			Injection Volume:	20 uL
Prep Date:	10/20/2014 1259			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.4	U	9.4	100
Anthracene		3.2	U	3.2	21
Benzo[a]anthracene		3.3	U	3.3	16
Benzo[a]pyrene		6.7	U	6.7	16
Benzo[b]fluoranthene		4.4	U	4.4	16
Benzo[g,h,i]perylene		7.5	U	7.5	31
Benzo[k]fluoranthene		4.1	U	4.1	16
Chrysene		5.1	U	5.1	42
Dibenzo(a,h)anthracene		11	U	11	31
Fluoranthene		14	U	14	42
Fluorene		5.5	U	5.5	31
Indeno[1,2,3-cd]pyrene		13	U	13	31
Naphthalene		13	U	13	100
Phenanthrene		13	U	13	42
Pyrene		13	U	13	42

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	83		72 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V117

Lab Sample ID: 280-61368-5
Client Matrix: Solid % Moisture: 3.5

Date Sampled: 10/15/2014 1238
Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-248858	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-248659	Initial Weight/Volume:	32.3 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	10/21/2014 1721			Injection Volume:	20 uL
Prep Date:	10/20/2014 1259			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.6	U	9.6	96
Acenaphthylene		8.7	U	8.7	96
Anthracene		2.9	U	2.9	19
Benzo[a]anthracene		3.1	U	3.1	14
Benzo[a]pyrene		6.2	U	6.2	14
Benzo[b]fluoranthene		4.0	U	4.0	14
Benzo[g,h,i]perylene		6.9	U	6.9	29
Benzo[k]fluoranthene		3.8	U	3.8	14
Chrysene		4.7	U	4.7	38
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		13	U	13	38
Fluorene		5.1	U	5.1	29
Indeno[1,2,3-cd]pyrene		12	U	12	29
Naphthalene		12	U	12	96
Phenanthrene		12	U	12	38
Pyrene		12	U	12	38

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	86		72 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: **J1V118**

Lab Sample ID: 280-61368-6
Client Matrix: Solid % Moisture: 3.1

Date Sampled: 10/15/2014 1223
Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-248858	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-248659	Initial Weight/Volume:	30.3 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	10/21/2014 1751			Injection Volume:	20 uL
Prep Date:	10/20/2014 1259			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.2	U	9.2	100
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.3	U	3.3	15
Benzo[a]pyrene		6.6	U	6.6	15
Benzo[b]fluoranthene		4.3	U	4.3	15
Benzo[g,h,i]perylene		7.4	U	7.4	31
Benzo[k]fluoranthene		4.0	U	4.0	15
Chrysene		4.9	U	4.9	41
Dibenzo(a,h)anthracene		11	U	11	31
Fluoranthene		13	U	13	41
Fluorene		5.4	U	5.4	31
Indeno[1,2,3-cd]pyrene		12	U	12	31
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	41
Pyrene		12	U	12	41

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	87		72 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V119

Lab Sample ID: 280-61368-7
Client Matrix: Solid

% Moisture: 4.0

Date Sampled: 10/15/2014 1228
Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-248858	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-248659	Initial Weight/Volume:	31.2 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	10/21/2014 1852			Injection Volume:	20 uL
Prep Date:	10/20/2014 1259			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.0	U	9.0	100
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.4	U	6.4	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.2	U	7.2	30
Benzo[k]fluoranthene		3.9	U	3.9	15
Chrysene		4.8	U	4.8	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	40
Fluorene		5.3	U	5.3	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	87		72 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V120

Lab Sample ID: 280-61368-8
Client Matrix: Solid

% Moisture: 5.5

Date Sampled: 10/15/2014 1213
Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-248858	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-248659	Initial Weight/Volume:	32.6 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	10/21/2014 1923			Injection Volume:	20 uL
Prep Date:	10/20/2014 1259			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.7	U	9.7	97
Acenaphthylene		8.8	U	8.8	97
Anthracene		3.0	U	3.0	19
Benzo[a]anthracene		3.1	U	3.1	15
Benzo[a]pyrene		6.2	U	6.2	15
Benzo[b]fluoranthene		4.1	U	4.1	15
Benzo[g,h,i]perylene		7.0	U	7.0	29
Benzo[k]fluoranthene		3.8	U	3.8	15
Chrysene		4.7	U	4.7	39
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		13	U	13	39
Fluorene		5.1	U	5.1	29
Indeno[1,2,3-cd]pyrene		12	U	12	29
Naphthalene		12	U	12	97
Phenanthrene		12	U	12	39
Pyrene		12	U	12	39

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	84		72 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V121

Lab Sample ID: 280-61368-9
Client Matrix: Solid

% Moisture: 5.0

Date Sampled: 10/15/2014 1218
Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-248858	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-248659	Initial Weight/Volume:	31.0 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	10/21/2014 1953			Injection Volume:	20 uL
Prep Date:	10/20/2014 1259			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.2	U	9.2	100
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.5	U	6.5	15
Benzo[b]fluoranthene		4.3	U	4.3	15
Benzo[g,h,i]perylene		7.3	U	7.3	31
Benzo[k]fluoranthene		4.0	U	4.0	15
Chrysene		4.9	U	4.9	41
Dibenzo(a,h)anthracene		11	U	11	31
Fluoranthene		13	U	13	41
Fluorene		5.4	U	5.4	31
Indeno[1,2,3-cd]pyrene		12	U	12	31
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	41
Pyrene		12	U	12	41

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	84		72 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V122

Lab Sample ID: 280-61368-10
Client Matrix: Solid % Moisture: 3.7

Date Sampled: 10/15/2014 1202
Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-248858	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-248659	Initial Weight/Volume:	30.8 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	10/21/2014 2024			Injection Volume:	20 uL
Prep Date:	10/20/2014 1259			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.1	U	9.1	100
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.5	U	6.5	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.3	U	7.3	30
Benzo[k]fluoranthene		4.0	U	4.0	15
Chrysene		4.9	U	4.9	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	40
Fluorene		5.3	U	5.3	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	84		72 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: **J1V123**

Lab Sample ID: 280-61368-11
Client Matrix: Solid % Moisture: 3.2

Date Sampled: 10/15/2014 1209
Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-248858	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-248659	Initial Weight/Volume:	30.0 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	10/21/2014 2054			Injection Volume:	20 uL
Prep Date:	10/20/2014 1259			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.3	U	9.3	100
Anthracene		3.2	U	3.2	21
Benzo[a]anthracene		3.3	U	3.3	15
Benzo[a]pyrene		6.6	U	6.6	15
Benzo[b]fluoranthene		4.3	U	4.3	15
Benzo[g,h,i]perylene		7.4	U	7.4	31
Benzo[k]fluoranthene		4.1	U	4.1	15
Chrysene		5.0	U	5.0	41
Dibenzo(a,h)anthracene		11	U	11	31
Fluoranthene		13	U	13	41
Fluorene		5.5	U	5.5	31
Indeno[1,2,3-cd]pyrene		12	U	12	31
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	41
Pyrene		12	U	12	41

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	84		72 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: **J1V124**

Lab Sample ID: 280-61368-12
Client Matrix: Solid % Moisture: 5.3

Date Sampled: 10/15/2014 1308
Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-248858	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-248659	Initial Weight/Volume:	30.8 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	10/21/2014 2125			Injection Volume:	20 uL
Prep Date:	10/20/2014 1259			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.3	U	9.3	100
Anthracene		3.1	U	3.1	21
Benzo[a]anthracene		3.3	U	3.3	15
Benzo[a]pyrene		9.8	J X	6.6	15
Benzo[b]fluoranthene		6.0	J X	4.3	15
Benzo[g,h,i]perylene		7.4	U	7.4	31
Benzo[k]fluoranthene		4.1	U	4.1	15
Chrysene		5.7	J	5.0	41
Dibenzo(a,h)anthracene		11	U	11	31
Fluoranthene		13	U	13	41
Fluorene		5.4	U	5.4	31
Indeno[1,2,3-cd]pyrene		12	U	12	31
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	41
Pyrene		12	U	12	41

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	86		72 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: **J1V125**

Lab Sample ID: 280-61368-13
Client Matrix: Solid
% Moisture: 9.4

Date Sampled: 10/15/2014 1202
Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-248858	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-248659	Initial Weight/Volume:	30.4 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	10/21/2014 2155			Injection Volume:	20 uL
Prep Date:	10/20/2014 1259			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		11	U	11	110
Acenaphthylene		9.8	U	9.8	110
Anthracene		3.3	U	3.3	22
Benzo[a]anthracene		3.5	U	3.5	16
Benzo[a]pyrene		7.0	U	7.0	16
Benzo[b]fluoranthene		4.6	U	4.6	16
Benzo[g,h,i]perylene		7.8	U	7.8	33
Benzo[k]fluoranthene		4.3	U	4.3	16
Chrysene		5.3	U	5.3	44
Dibenzo(a,h)anthracene		12	U	12	33
Fluoranthene		14	U	14	44
Fluorene		5.8	U	5.8	33
Indeno[1,2,3-cd]pyrene		13	U	13	33
Naphthalene		13	U	13	110
Phenanthrene		13	U	13	44
Pyrene		13	U	13	44

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	89		72 - 115

11/22/14

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-61368-1

SDG #: JP0872
SAF#: RC-075

Date SDG Closed: October 17, 2014
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V113	280-61368-1	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V114	280-61368-2	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V115	280-61368-3	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V116	280-61368-4	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V117	280-61368-5	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V118	280-61368-6	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V119	280-61368-7	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V120	280-61368-8	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V121	280-61368-9	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V122	280-61368-10	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V123	280-61368-11	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V124	280-61368-12	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V125	280-61368-13	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V126	280-61368-14	6010/7471	6010B/7471A

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being *used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels* without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 10/17/2014 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.5° C and 1.0° C.

GC SEMIVOLATILES - SW846 8082 - PCBs
No anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
C10-C36 is present in the method blank associated with batch 280-248804 at a level greater than half the reporting limit. As no detectable concentrations of C10-C36 are present in the associated samples at a level greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

Low levels of C10-C28 are present in the method blank associated with batch 280-248804. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

No other anomalies were encountered.

HPLC - SW846 8310 - PAHs

The RPD between the primary and confirmation columns exceeded 40% for Benzo[a]pyrene and Benzo[b]fluoranthene in sample J1V124. The lower of the two values has been reported, as matrix interference is evident on both columns. The results have been flagged with an "X".

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A

Serial dilution of a digestate in batch 280-248528 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Due to matrix interference, samples J1V113, J1V114, J1V118, J1V123 and J1V124 required 2X dilutions prior to the analysis of Beryllium. The reporting limits have been adjusted relative to the dilutions required.

Iron, a common laboratory contaminant, is present at a level greater than the reporting limit in the method blank associated with batch 280-248528. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

Silver is present in the method blank associated with batch 280-248528 at 0.163 mg/kg, which is greater than half the project specific reporting limit (PSRL) of 0.2 mg/kg. TestAmerica's practical quantitation limit (PQL) for Silver is 1 mg/kg. The laboratory cannot maintain system cleanliness at this low level; therefore, corrective action is not initiated. It can be noted that the concentration found in the method blank is less than half of the laboratory standard PQL, and associated sample results were either non-detect or less than the reporting limit.

Zinc is present in the method blank associated with batch 280-248528 at 0.745 mg/kg, which is greater than half the project specific reporting limit (PSRL) of 1 mg/kg. TestAmerica's practical quantitation limit (PQL) for Zinc is 3 mg/kg. The laboratory cannot maintain system cleanliness at this low level; therefore, corrective action is not initiated. It can be noted that the concentration found in the method blank is less than half of the laboratory standard PQL, and with the exception of 'blank' sample J1V126, the associated sample amounts are twenty times greater than the method blank concentration.

Low levels of Aluminum are present in the method blank associated with batch 280-248528. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

Silicon was recovered outside the control limits, biased low, in the LCS associated with batch 280-248528 and in the Matrix Spike performed on sample J1V113 in batch 280-248528. The associated sample results have been flagged "N". Silicon is a poor performer and has a history of reacting inconsistently. Data are reported as is.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1V113; therefore, control limits are not applicable.

No other anomalies were encountered.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-454

Collector	Company Contact	Telephone No.	Project Coordinator	Price Code	Data Turnaround
H. Weber	Joan Kessner	375-4688	KESSNER, JH	7 days	8B

Project Designation	Sampling Location	SAF No.
100-D/DR Field Remediation	100-D-81, Verification, excavation	RC-075

Ice Chest No.	Field Logbook No.	COA	Method of Shipment
RCC-07-013	EL-1662-03	000D812000	Commercial Carrier / Fed Ex

Shipped To	Offsite Property No.	Bill of Lading/Air Bill No.
TestAmerica Denver	A131274	See OSPC

Other Labs Shipped To
TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS
None

Special Handling and/or Storage
None 10-15-14 CMB
cool 4C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
Type of Container	G/P	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	250mL	125mL	250mL	250mL							
Sample Analysis	See Item (1) in Special Instructions	TPH-Diesel Range - WTPH-D +	PAHs - 8310	PCBs - 8082							

Sample No.	Matrix	Sample Date	Sample Time									
J1V113	SOIL	10/15/14	1252	X	X	X	X					
J1V114	SOIL	10/15/14	1242	X	X	X	X					
J1V115	SOIL	10/15/14	1248	X	X	X	X					
J1V116	SOIL	10/15/14	1232	X	X	X	X					
J1V117	SOIL	10/15/14	1238	X	X	X	X					

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Heather Weber / [illegible]	1313 10/15/14	C. Martinez / C. Martinez	1313 10/15/14
C. Martinez / C. Martinez	1545 10/15/14	C. Bingham	1545 10-15-14
C. Bingham	1550 10-15-14	1060 Battelle, fridge #1A	1550 10-15-14
1060 Battelle, fridge #1A	0730 10-16-14	C. Bingham	0730 10-16-14
C. Bingham WCH	0735 10-16-14	fed EX	
			9:00 10/17/14

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

1.0, 0.5 IRG QF=0.0
Tracked by MAP 10/17/14

REVIEWED BY K. Woodward DATE 10-16-14

JP0872

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-075-454	Page 2 of 3
Collector: H. Weber	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 7 days 8B	Data Turnaround
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-81, Verification, excavation		SAF No.: RC-075		
Ice Chest No.: KCC-07-013	Field Logbook No.: EL-1662-03	COA: 000D812000	Method of Shipment: Commercial Carrier / Fed Ex		
Shipped To: TestAmerica Denver	Offsite Property No.: A131274		Bill of Lading/Air Bill No.: See OSPC		

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage: None 10-15-14 CMB; cool 4C

Page 1 of 1

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
				Type of Container	G/P	aG	aG	aG						
				No. of Container(s)	1	1	1	1						
				Volume	250mL	125mL	250mL	250mL						
				Sample Analysis	See Item (1) in Special Instructions	TPH-Diesel Range - WTPH-D +	PAHs - 8310	PCBs - 8082						
J1V118	SOIL	10/15/14	1223		X	X	X	X						
J1V119	SOIL	10/15/14	1228		X	X	X	X						
J1V120	SOIL	10/15/14	1213		X	X	X	X						
J1V121	SOIL	10/15/14	1218		X	X	X	X						
J1V122	SOIL	10/15/14	1202		X	X	X	X						

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Heather Weber / [illegible]	10/15/14 1313	S. Martinez / S. Martinez	10/15/14 1313
S. Martinez / S. Martinez	10/15/14 1545	C. Bingham	10-15-14 1549
C. Bingham	10-15-14 1550	1060 Battelle, Fridge #1A	10-15-14 1550
1060 Battelle, Fridge #1A	10-16-14 0730	C. Bingham	10-16-14 0730
C. Bingham WCH	10-16-14 0735	Fed Ex	
			10/17/14 9:00

FINAL SAMPLE DISPOSITION: Disposal Method; Disposed By; Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

REVIEWED BY K. Woodward DATE 10-16-14

JP0872

WCH-EE-011

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-454 | Page 3 of 3

Collector: H. Weber	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7 days 8B	Data Turnaround		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-81, Verification, excavation		SAF No.: RC-075
Ice Chest No.: RCC-07-013	Field Logbook No.: EL-1662-03	COA: 000D812000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131274		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage: ~~None~~ 10-15-14 CMB Cool 4C

Page 1 of 2

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis: See item (1) in Special Instructions	Sample Analysis: TPH-Diesel Range - WTPH-D +	Sample Analysis: PAHs - 8310	Sample Analysis: PCBs - 8082
				Cool 4C	G/P	1	250mL				
				Cool 4C	aG	1	125mL				
				Cool 4C	aG	1	250mL				
				Cool 4C	aG	1	250mL				
J1V123	SOIL	10/15/14	1209					X	X	X	X
J1V124	SOIL	10/15/14	1308					X	X	X	X
J1V125	SOIL	10/15/14	1202					X	X	X	X
J1V126	SOIL	10/15/14	1157					X	n/a	n/a	n/a

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Heather Weber / [illegible]	10/15/14 1313	[illegible] / [illegible]	10/15/14 1313
[illegible] / [illegible]	10/15/14 1545	C. Bingham	10-15-14 1545
C. Bingham	10-15-14 1550	10060 Battelle, fridge #1A	10-15-14 1550
10060 Battelle, fridge #1A	10-16-14 0730	C. Bingham	10-16-14 0730
C. Bingham WCH	10-16-14 0735	fed Ex	
		[illegible]	10/17/14 9:00

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

REVIEWED BY K. WOODWARD DATE 10-16-14

JP0872

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GENERAL ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-D-81		DATA PACKAGE:	JP0872	
VALIDATOR:	ECR	LAB:	TAC	DATE:	11/21/14
			SDG:	JP0872	
ANALYSES PERFORMED					
8015	8021	8141	8151	8315	8310
		WTPH-HCID	WTPH-G	WTPH-D	
SAMPLES/MATRIX:					
J1V113 J1V114 J1V115 J1V116 J1V117 J1V118					
J1V119 J1V120 J1V121 J1V122 J1V123 J1V124					
J1V125					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

Initial calibrations acceptable? ..... Yes No (N/A)

Continuing calibrations acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

Comments: _____

GENERAL ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: no FB

4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A
Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A
Surrogates traceable? (Levels D, E) ..... Yes No N/A
Surrogates expired? (Levels D, E) ..... Yes No N/A
MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A
Comments:

no PA

GENERAL ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A

Duplicate results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

6. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments: _____

GENERAL ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A
Results supported in the raw data? (Levels D, E) ..... Yes No N/A
Samples properly prepared? (Levels D, E) ..... Yes No N/A
Detection limits meet RDL? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments:_____

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other aborbant) cleanup performed? ..... Yes No N/A
Lot check performed? ..... Yes No N/A
Check recoveries aceptable? ..... Yes No N/A
Check materials traceable? ..... Yes No N/A
Check materials Expired? ..... Yes No N/A
Analytical batch QC given similar cleanup? ..... Yes No N/A
Transcription/Calculation Errors? ..... Yes No N/A
Comments:_____

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Method Blank - Batch: 280-248659

Method: 8310
Preparation: 3550C

Lab Sample ID:	MB 280-248659/1-A	Analysis Batch:	280-248858	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-248659	Lab File ID:	G1021008.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	32.2 g
Analysis Date:	10/21/2014 1316	Units:	ug/Kg	Final Weight/Volume:	4 mL
Prep Date:	10/20/2014 1259			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Result	Qual	MDL	RL
Acenaphthene	9.3	U	9.3	93
Acenaphthylene	8.4	U	8.4	93
Anthracene	2.8	U	2.8	19
Benzo[a]anthracene	3.0	U	3.0	14
Benzo[a]pyrene	6.0	U	6.0	14
Benzo[b]fluoranthene	3.9	U	3.9	14
Benzo[g,h,i]perylene	6.7	U	6.7	28
Benzo[k]fluoranthene	3.7	U	3.7	14
Chrysene	4.5	U	4.5	37
Dibenzo(a,h)anthracene	10	U	10	28
Fluoranthene	12	U	12	37
Fluorene	4.9	U	4.9	28
Indeno[1,2,3-cd]pyrene	11	U	11	28
Naphthalene	11	U	11	93
Phenanthrene	11	U	11	37
Pyrene	11	U	11	37

Surrogate	% Rec	Acceptance Limits
Terphenyl-d14 (SUR)	90	72 - 115

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Lab Control Sample - Batch: 280-248659

Method: 8310
Preparation: 3550C

Lab Sample ID:	LCS 280-248659/2-A	Analysis Batch:	280-248858	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-248659	Lab File ID:	G1021009.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.1 g
Analysis Date:	10/21/2014 1347	Units:	ug/Kg	Final Weight/Volume:	4 mL
Prep Date:	10/20/2014 1259			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acenaphthene	1930	1650	85	78 - 116	
Acenaphthylene	1930	1620	84	76 - 115	
Anthracene	1930	1600	83	74 - 115	
Benzo[a]anthracene	1930	1700	88	85 - 120	
Benzo[a]pyrene	1930	1710	88	74 - 121	
Benzo[b]fluoranthene	1930	1680	87	85 - 115	
Benzo[g,h,i]perylene	1930	1830	95	85 - 120	
Benzo[k]fluoranthene	1930	1660	86	85 - 115	
Chrysene	1930	1780	92	83 - 115	
Dibenzo(a,h)anthracene	1930	1650	85	83 - 115	
Fluoranthene	1930	1680	87	83 - 115	
Fluorene	1930	1670	87	80 - 115	
Indeno[1,2,3-cd]pyrene	1930	1760	91	85 - 123	
Naphthalene	1930	1590	83	80 - 121	
Phenanthrene	1930	1620	84	80 - 115	
Pyrene	1930	1780	93	75 - 116	

Surrogate	% Rec	Acceptance Limits
Terphenyl-d14 (SUR)	92	72 - 115

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-248659

Method: 8310
Preparation: 3550C

MS Lab Sample ID:	280-61368-1	Analysis Batch:	280-248858	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-248659	Lab File ID:	G1021011.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.4 g
Analysis Date:	10/21/2014 1448			Final Weight/Volume:	4 mL
Prep Date:	10/20/2014 1259			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

MSD Lab Sample ID:	280-61368-1	Analysis Batch:	280-248858	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-248659	Lab File ID:	G1021012.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.3 g
Analysis Date:	10/21/2014 1518			Final Weight/Volume:	4 mL
Prep Date:	10/20/2014 1259			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Acenaphthene	87	86	78 - 116	0	20		
Acenaphthylene	84	84	76 - 115	0	21		
Anthracene	84	83	74 - 115	1	20		
Benzo[a]anthracene	88	86	85 - 120	2	20		
Benzo[a]pyrene	89	92	74 - 121	3	20		
Benzo[b]fluoranthene	87	86	85 - 115	1	20		
Benzo[g,h,i]perylene	95	94	85 - 120	0	20		
Benzo[k]fluoranthene	86	86	85 - 115	0	20		
Chrysene	92	90	83 - 115	2	20		
Dibenzo(a,h)anthracene	85	84	83 - 115	1	20		
Fluoranthene	88	86	83 - 115	2	20		
Fluorene	88	87	80 - 115	1	20		
Indeno[1,2,3-cd]pyrene	92	91	85 - 123	1	20		
Naphthalene	83	83	80 - 121	0	20		
Phenanthrene	85	84	80 - 115	0	20		
Pyrene	93	91	75 - 116	1	20		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
Terphenyl-d14 (SUR)	93	89	72 - 115

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-248659

Method: 8310
Preparation: 3550C

MS Lab Sample ID:	280-61368-1	Units: ug/Kg	
Client Matrix:	Solid		
Dilution:	1.0		
Analysis Date:	10/21/2014 1448		
Prep Date:	10/20/2014 1259		
Leach Date:	N/A		

MSD Lab Sample ID:	280-61368-1
Client Matrix:	Solid
Dilution:	1.0
Analysis Date:	10/21/2014 1518
Prep Date:	10/20/2014 1259
Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Acenaphthene	10	U	2060	2060	1790	1780
Acenaphthylene	9.3	U	2060	2060	1740	1740
Anthracene	3.2	U	2060	2060	1720	1710
Benzo[a]anthracene	3.3	U	2060	2060	1810	1780
Benzo[a]pyrene	6.7	U	2060	2060	1830	1890
Benzo[b]fluoranthene	4.4	U	2060	2060	1790	1780
Benzo[g,h,i]perylene	7.5	U	2060	2060	1940	1950
Benzo[k]fluoranthene	4.1	U	2060	2060	1770	1770
Chrysene	5.0	U	2060	2060	1900	1870
Dibenzo(a,h)anthracene	11	U	2060	2060	1760	1740
Fluoranthene	13	U	2060	2060	1800	1780
Fluorene	5.5	U	2060	2060	1810	1790
Indeno[1,2,3-cd]pyrene	12	U	2060	2060	1890	1870
Naphthalene	12	U	2060	2060	1710	1710
Phenanthrene	12	U	2060	2060	1740	1730
Pyrene	12	U	2060	2060	1910	1890

Date: 24 November 2014
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 100-D-81
Subject: Wet Chemistry - Data Package No. JP0872-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0872 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1V113	10/15/14	Soil	C	See note 1
J1V114	10/15/14	Soil	C	See note 1
J1V115	10/15/14	Soil	C	See note 1
J1V116	10/15/14	Soil	C	See note 1
J1V117	10/15/14	Soil	C	See note 1
J1V118	10/15/14	Soil	C	See note 1
J1V119	10/15/14	Soil	C	See note 1
J1V120	10/15/14	Soil	C	See note 1
J1V121	10/15/14	Soil	C	See note 1
J1V122	10/15/14	Soil	C	See note 1
J1V123	10/15/14	Soil	C	See note 1
J1V124	10/15/14	Soil	C	See note 1
J1V125	10/15/14	Soil	C	See note 1

1 – Chromium VI by 7196A

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are 30 days for chromium VI.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blanks**

Method Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J1V122/J1V125) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package JP0872 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*.

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: JP0872	REVIEWER: ELR	Project: 100-D-81	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Sample Results Summary

Date: 21-Oct-14

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 62948 **SDG No:** JP0872

Batch	Client Id / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
4293021	7196_CR6								
	J1V113								
	M494C1AA	HEXCHROME	1.84E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	M494C1AD	HEXCHROME	1.63E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	12.1
	J1V114								
	M494D1AA	HEXCHROME	1.91E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1V115								
	M494E1AA	HEXCHROME	3.11E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1V116								
	M494F1AA	HEXCHROME	3.58E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1V117								
	M494G1AA	HEXCHROME	2.89E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1V118								
	M494H1AA	HEXCHROME	4.54E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1V119								
	M494J1AA	HEXCHROME	2.71E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1V120								
	M494K1AA	HEXCHROME	4.04E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1V121								
	M494L1AA	HEXCHROME	3.54E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1V122								
	M494M1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V123								
	M494N1AA	HEXCHROME	2.71E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1V124								
	M494P1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V125								
	M494Q1AA	HEXCHROME	1.87E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	

No. of Results: 14

11/22/14

TestAmerica Inc

rptTALRchSaSummary2 V5.3.5
A2002

RPD - Relative Percent Difference.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mde/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

Washington Hanford Closure
2620 Fermi Avenue
Richland, WA 99354

October 21, 2014

Attention: Joan Kessner

SAF Number	:	RC-075
Date SDG Closed	:	October 16, 2014
Number of Samples	:	Thirteen (13)
Sample Type	:	Soil
SDG Number	:	JP0872
Data Deliverable	:	7-Day / Summary

CASE NARRATIVE

I. Introduction

On October 16, 2014, thirteen soil samples were received at TestAmerica for chemistry analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Washington Closure Hanford (WCH) specific ID:

WCH ID#	TARL ID#	MATRIX	DATE OF RECEIPT
J1V113	M494C	SOIL	10/16/14
J1V114	M494D	SOIL	10/16/14
J1V115	M494E	SOIL	10/16/14
J1V116	M494F	SOIL	10/16/14
J1V117	M494G	SOIL	10/16/14
J1V118	M494H	SOIL	10/16/14
J1V119	M494J	SOIL	10/16/14
J1V120	M494K	SOIL	10/16/14
J4V121	M494L	SOIL	10/16/14
J1V122	M494M	SOIL	10/16/14
J1V123	M494N	SOIL	10/16/14
J1V124	M494P	SOIL	10/16/14
J1V125	M494Q	SOIL	10/16/14

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analysis was:

Chemical Analysis
Hexavalent Chromium by EPA method 7196A

IV. Quality Control

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

V. Comments

Chemical Analysis
Hexavalent Chromium by EPA method 7196A:
The LCS, batch blank, samples, sample duplicate (J1V113) and sample matrix spike (J1V113) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:

Rhonda Wagar
Project Manager

TestAmerica Laboratories, Inc.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-454

Collector: H. Weber	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7 days	Data Turnaround: 8B		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-81, Verification, excavation		SAF No.: RC-075
Ice Chest No.: ~~N/A~~ WCH-12-008 10-16-14 CMB	Field Logbook No.: EL-1662-03	COA: 000D812000	Method of Shipment: Local Delivery
Shipped To: TestAmerica Richland	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A

Other Labs Shipped To: TestAmerica Denver

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage: ~~None~~ 10-15-14 CMB Cool 4C

Preservation	Cool 4C										
Type of Container	G/P										
No. of Container(s)	1										
Volume	125mL										
Sample Analysis	Chromium, Hex - 7196										
Sample No.	Matrix	Sample Date	Sample Time								
J1V113 M494C	SOIL	10/15/14	1252	X							
J1V114 M494D	SOIL	10/15/14	1242	X							
J1V115 M494E	SOIL	10/15/14	1248	X							
J1V116 M494F	SOIL	10/15/14	1232	X							
J1V117 M494G	SOIL	10/15/14	1238	X							

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Heather Weber	10/15/14 1313	C. Martinez/S. Maghe	10/15/14 1313
C. Martinez/Signature	10/15/14 1545	C. Bingham	10-15-14 1545
C. Bingham	10-15-14 1550	1060 Battelle, fridge #14	10-15-14 1550
1060 Battelle, fridge #14	10-16-14 0730	C. Bingham	10-16-14 0730
C. Bingham WCH	10-16-14 1000	J. Fitzsimmons	10/16/14 1000

FINAL SAMPLE DISPOSITION: Disposal Method — Disposed By — Date/Time

WCH-EE-011

SPECIAL INSTRUCTIONS

J4J160418

Due 10-23-14

J4J160418

JP0872

REVIEWED BY K. WOODY Via email DATE 10-16-14

TestAmerica Laboratories, Inc.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-075-454	Page 2 of 3

Collector: H. Weber	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 7 days	Data Turnaround: 8B
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-81, Verification, excavation		SAF No.: RC-075		
Ice Chest No.: ~~A~~ 10-16-14 cmB WCH-12-008	Field Logbook No.: EL-1662-03	COA: 000D812000	Method of Shipment: Local Delivery		
Shipped To: TestAmerica Richland	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A		

Other Labs Shipped To: TestAmerica Denver

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage: ~~None~~ 10-15-14 cmB COOL 4C

Preservation	Cool 4C										
Type of Container	G/P										
No. of Container(s)	1										
Volume	125mL										
Sample Analysis	Chromium Hex - 7196										

Sample No.	Matrix	Sample Date	Sample Time									
J1V118 M494H	SOIL	10/15/14	1223	X								
J1V119 M494J	SOIL	10/15/14	1228	X								
J1V120 M494K	SOIL	10/15/14	1213	X								
J1V121 M494L	SOIL	10/15/14	1218	X								
J1V122 M494M	SOIL	10/15/14	1202	X								

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	Sign/Print Names
Heather Weber/[signature]	10/15/14 1313	C. Martinez/C. Martinez	10/15/14 1313	
C. Martinez/C. Martinez	10/15/14 1545	C. Bingham	10-15-14 ~~10-15-14~~ 1545	
C. Bingham	10-15-14 1550	1060 Battelle, Fridge #1A	10-15-14 1550	
1060 Battelle, Fridge #1A	10-16-14 0730	C. Bingham	10-16-14 0730	
C. Bingham	10-16-14 1000	J. Fricz	10/16/14 1000	

FINAL SAMPLE DISPOSITION: Disposal Method: ____ Disposed By: ____ Date/Time: ____

WCH-EE-011

SPECIAL INSTRUCTIONS

10-16-14 cmB

J4J160418

Due 10-23-14

REVIEWED BY K. Woodward DATE 10-16-14

JP0872

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TestAmerica Laboratories, Inc.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-075-454	Page 3 of 3
Collector: H. Weber	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 7 days / Data Turnaround: 8B
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-81, Verification, excavation		SAF No.: RC-075	
Ice Chest No.: ~~WCH-12-008~~ 10-16-14 CMB	Field Logbook No.: EL-1662-03	COA: 000D812000	Method of Shipment: Local Delivery	
Shipped To: TestAmerica Richland	Offsite Property No.: n/a		Bill of Lading/Air Bill No.: n/a	

Other Labs Shipped To: TestAmerica Denver

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage: ~~None~~ Cool 4C

10-15-14 CMB

Preservation	Cool 4C											
Type of Container	G/P											
No. of Container(s)	1											
Volume	125mL											
Sample Analysis	Chromium Hex - 7196											

Sample No.	Matrix	Sample Date	Sample Time									
J1V123 M494W	SOIL	10/15/14	1209	X								
J1V124 M494P	SOIL	10/15/14	1308	X								
J1V125 M494Q	SOIL	10/15/14	1202	X								

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Heather Weber/[illegible]	10/15/14 1313	C. Martinez/C. Martinez	10/15/14 1313
C. Martinez/C. Martinez	10/15/14 1545	C. Bingham	10-15-14 1545
C. Bingham	10-15-14 1550	1060 Battelle, fndsc #14	10-15-14 1550
1060 Battelle, fndsc #14	10-16-14 0730	C. Bingham	10-16-14 0730
C. Bingham WCH	10-16-14 1000	J. Frost	10/16/14 1000

SPECIAL INSTRUCTIONS

REVIEWED BY K. WOOD Via email DATE 10-16-14

JP0872

FINAL SAMPLE DISPOSITION — Disposal Method: ____ Disposed By: ____ Date/Time: ____

WCH-EE-011

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Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-D-81		DATA PACKAGE:	JP0872	
VALIDATOR:	ELR	LAB:	TAL	DATE:	11/21/14
			SDG:	JP0872	
ANALYSES PERFORMED					
Anions/IC	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	pH	NO_3/NO_2
Sulfate	TDS	TKN	Phosphate		
SAMPLES/MATRIX					
J1V113	J1V114	J1V115	J1V116	J1V117	
J1V118	J1V119	J1V120	J1V121	J1V122	
J1V123	J1V124	J1V125			
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes No N/A

Comments: _____

_____

_____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

ICV and CCV checks performed on all instruments? ..... Yes No N/A

ICV and CCV checks acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

_____

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A
ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: no FB

4. ACCURACY (Levels C, D, and E)

Spike samples analyzed? ..... Yes No N/A
Spike recoveries acceptable? ..... Yes No N/A
Sike standards NIST traceable? (Levels D, E) ..... Yes No N/A
Spike standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A
Comments:

no PAS

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A
Duplicate results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
Field duplicate RPD values acceptable? ..... Yes No N/A
Field split RPD values acceptable? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: _____

6. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A
Sample holding times acceptable? ..... Yes No N/A
Comments: _____

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

Appendix 6

Additional Documentation Requested by Client

QC Results Summary

Date: 21-Oct-14

TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

Report No. : 62948 **SDG No.:** JP0872

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
7196_CR6								
4293021 MATRIX SPIKE, J1V113								
M494C1AC	HEXCHROME	2.88E+01 +- 0.0E+00		mg/kg	N/A	93%	-0.1	1.55E-01
4293021 LCS,								
M5AMJ1AC	HEXCHROME	1.90E+01 +- 0.0E+00		mg/kg	N/A	95%	0.0	1.55E-01
4293021 BLANK QC,								
M5AMJ1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A			1.55E-01

No. of Results: 3

TestAmerica Inc
rptSTLRchQcSummary V5.3.5 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

Date: 24 November 2014
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 100-D-81
Subject: Diesel Range Organics - Data Package No. JP0872-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0872 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1V113	10/15/14	Soil	C	See note 1
J1V114	10/15/14	Soil	C	See note 1
J1V115	10/15/14	Soil	C	See note 1
J1V116	10/15/14	Soil	C	See note 1
J1V117	10/15/14	Soil	C	See note 1
J1V118	10/15/14	Soil	C	See note 1
J1V119	10/15/14	Soil	C	See note 1
J1V120	10/15/14	Soil	C	See note 1
J1V121	10/15/14	Soil	C	See note 1
J1V122	10/15/14	Soil	C	See note 1
J1V123	10/15/14	Soil	C	See note 1
J1V124	10/15/14	Soil	C	See note 1
J1V125	10/15/14	Soil	C	See note 1

1 – Diesel range organics by 8015B.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

· Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

· Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, the C10-C36 results in samples J1V115, J1V116, J1V117, J1V120, J1V122, J1V123 and J1V125 were qualified as undetected and flagged "U".

Due to method blank contamination, the C10-C28 results in samples J1V115, J1V116, J1V120, J1V122, J1V123 and J1V125 were qualified as undetected and flagged "U".

All other method blank results were acceptable.

Field Blanks

No field blank was submitted for analysis.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1V122/J1V125) were submitted for analysis. Laboratory duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. JP0872 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, the C10-C36 results in samples J1V115, J1V116, J1V117, J1V120, J1V122, J1V123 and J1V125 were qualified as undetected and flagged "U".

- Due to method blank contamination, the C10-C28 results in samples J1V115, J1V116, J1V120, J1V122, J1V123 and J1V125 were qualified as undetected and flagged "U".

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

DIESE RANGE ORGANIC DATA QUALIFICATION SUMMARY*

SDG: JP0872	**REVIEWER: ELR**	**Project: 100-D-81**	**PAGE 1 OF 1**
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
C10-C36	U	J1V115, J1V116 J1V117, J1V120 J1V122, J1V123 J1V125	Method blank contamination
C-10-C28	U	J1V115, J1V116 J1V120, J1V122 J1V123 , J1V125	Method blank contamination

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V113

Lab Sample ID: 280-61368-1
Client Matrix: Solid

% Moisture: 4.0

Date Sampled: 10/15/2014 1252
Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-249000	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-248804	Lab File ID:	10220009.D
Dilution:	1.0			Initial Weight/Volume:	31.7 g
Analysis Date:	10/22/2014 1225			Final Weight/Volume:	1 mL
Prep Date:	10/20/2014 2155			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		980	U	980	3900
C10-C28		670	U	670	3900

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	69		49 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V114

Lab Sample ID: 280-61368-2
Client Matrix: Solid

% Moisture: 4.3

Date Sampled: 10/15/2014 1242
Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-249408	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-249292	Lab File ID:	10240007.D
Dilution:	1.0			Initial Weight/Volume:	30.0 g
Analysis Date:	10/24/2014 1036			Final Weight/Volume:	1 mL
Prep Date:	10/23/2014 1420			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1000	U	1000	4200
C10-C28		710	U	710	4200

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	63		49 - 115

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: **J1V115**

Lab Sample ID: 280-61368-3
Client Matrix: Solid

% Moisture: 3.6

Date Sampled: 10/15/2014 1248
Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-249000	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-248804	Lab File ID:	10220011.D
Dilution:	1.0			Initial Weight/Volume:	31.1 g
Analysis Date:	10/22/2014 1313			Final Weight/Volume:	1 mL
Prep Date:	10/20/2014 2155			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1800	J B U	1000	4000
C10-C28		1200	J B U	680	4000

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	71		49 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: **J1V116**

Lab Sample ID: 280-61368-4
Client Matrix: Solid

% Moisture: 5.9

Date Sampled: 10/15/2014 1232
Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-249000	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-248804	Lab File ID:	10220014.D
Dilution:	1.0			Initial Weight/Volume:	30.6 g
Analysis Date:	10/22/2014 1425			Final Weight/Volume:	1 mL
Prep Date:	10/20/2014 2155			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1800	J B U	1000	4200
C10-C28		730	J B U	710	4200

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	72		49 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V117

Lab Sample ID: 280-61368-5
Client Matrix: Solid

% Moisture: 3.5

Date Sampled: 10/15/2014 1238
Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-249000	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-248804	Lab File ID:	10220015.D
Dilution:	1.0			Initial Weight/Volume:	30.2 g
Analysis Date:	10/22/2014 1450			Final Weight/Volume:	1 mL
Prep Date:	10/20/2014 2155			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1100	J B U	1000	4100
C10-C28		700	U	700	4100

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	71		49 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V118

Lab Sample ID: 280-61368-6
Client Matrix: Solid

% Moisture: 3.1

Date Sampled: 10/15/2014 1223
Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-249000	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-248804	Lab File ID:	10220016.D
Dilution:	1.0			Initial Weight/Volume:	30.0 g
Analysis Date:	10/22/2014 1514			Final Weight/Volume:	1 mL
Prep Date:	10/20/2014 2155			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1000	U	1000	4100
C10-C28		700	U	700	4100

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	70		49 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: **J1V119**

Lab Sample ID: 280-61368-7
Client Matrix: Solid

% Moisture: 4.0

Date Sampled: 10/15/2014 1228
Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-249000	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-248804	Lab File ID:	10220017.D
Dilution:	1.0			Initial Weight/Volume:	30.0 g
Analysis Date:	10/22/2014 1538			Final Weight/Volume:	1 mL
Prep Date:	10/20/2014 2155			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1000	U	1000	4200
C10-C28		710	U	710	4200

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	68		49 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V120

Lab Sample ID: 280-61368-8
Client Matrix: Solid

% Moisture: 5.5

Date Sampled: 10/15/2014 1213
Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-249000	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-248804	Lab File ID:	10220018.D
Dilution:	1.0			Initial Weight/Volume:	30.0 g
Analysis Date:	10/22/2014 1602			Final Weight/Volume:	1 mL
Prep Date:	10/20/2014 2155			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1300	J B U	1100	4200
C10-C28		830	J B U	720	4200

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	67		49 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V121

Lab Sample ID: 280-61368-9
Client Matrix: Solid

% Moisture: 5.0

Date Sampled: 10/15/2014 1218
Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-249408	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-249292	Lab File ID:	10240010.D
Dilution:	1.0			Initial Weight/Volume:	31.3 g
Analysis Date:	10/24/2014 1148			Final Weight/Volume:	1 mL
Prep Date:	10/23/2014 1420			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1000	U	1000	4000
C10-C28		680	U	680	4000

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	63		49 - 115

V 11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: **J1V122**

Lab Sample ID: 280-61368-10
Client Matrix: Solid

% Moisture: 3.7

Date Sampled: 10/15/2014 1202
Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-249000	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-248804	Lab File ID:	10220020.D
Dilution:	1.0			Initial Weight/Volume:	30.2 g
Analysis Date:	10/22/2014 1650			Final Weight/Volume:	1 mL
Prep Date:	10/20/2014 2155			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1300	J B U	1000	4100
C10-C28		890	J B U	700	4100

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	71		49 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V123

Lab Sample ID: 280-61368-11
Client Matrix: Solid

% Moisture: 3.2

Date Sampled: 10/15/2014 1209
Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-249000	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-248804	Lab File ID:	10220023.D
Dilution:	1.0			Initial Weight/Volume:	31.3 g
Analysis Date:	10/22/2014 1802			Final Weight/Volume:	1 mL
Prep Date:	10/20/2014 2155			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1300	J B U	990	4000
C10-C28		840	J B U	670	4000

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	73		49 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V124

Lab Sample ID: 280-61368-12
Client Matrix: Solid

% Moisture: 5.3

Date Sampled: 10/15/2014 1308
Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-249408	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-249292	Lab File ID:	10240011.D
Dilution:	1.0			Initial Weight/Volume:	30.3 g
Analysis Date:	10/24/2014 1212			Final Weight/Volume:	1 mL
Prep Date:	10/23/2014 1420			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		13000		1000	4200
C10-C28		7800		710	4200

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	64		49 - 115

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Client Sample ID: J1V125

Lab Sample ID: 280-61368-13
Client Matrix: Solid

% Moisture: 9.4

Date Sampled: 10/15/2014 1202
Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-249000	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-248804	Lab File ID:	10220025.D
Dilution:	1.0			Initial Weight/Volume:	31.0 g
Analysis Date:	10/22/2014 1850			Final Weight/Volume:	1 mL
Prep Date:	10/20/2014 2155			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1200	J B U	1100	4300
C10-C28		870	J B U	720	4300

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	74		49 - 115

U 10/22/14

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-61368-1

SDG #: JP0872
SAF#: RC-075

Date SDG Closed: October 17, 2014
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V113	280-61368-1	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V114	280-61368-2	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V115	280-61368-3	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V116	280-61368-4	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V117	280-61368-5	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V118	280-61368-6	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V119	280-61368-7	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V120	280-61368-8	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V121	280-61368-9	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V122	280-61368-10	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V123	280-61368-11	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V124	280-61368-12	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V125	280-61368-13	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V126	280-61368-14	6010/7471	6010B/7471A

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 10/17/2014 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.5° C and 1.0° C.

GC SEMIVOLATILES - SW846 8082 - PCBs
No anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
C10-C36 is present in the method blank associated with batch 280-248804 at a level greater than half the reporting limit. As no detectable concentrations of C10-C36 are present in the associated samples at a level greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

Low levels of C10-C28 are present in the method blank associated with batch 280-248804. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

No other anomalies were encountered.

HPLC - SW846 8310 - PAHs

The RPD between the primary and confirmation columns exceeded 40% for Benzo[a]pyrene and Benzo[b]fluoranthene in sample J1V124. The lower of the two values has been reported, as matrix interference is evident on both columns. The results have been flagged with an "X".

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A

Serial dilution of a digestate in batch 280-248528 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Due to matrix interference, samples J1V113, J1V114, J1V118, J1V123 and J1V124 required 2X dilutions prior to the analysis of Beryllium. The reporting limits have been adjusted relative to the dilutions required.

Iron, a common laboratory contaminant, is present at a level greater than the reporting limit in the method blank associated with batch 280-248528. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

Silver is present in the method blank associated with batch 280-248528 at 0.163 mg/kg, which is greater than half the project specific reporting limit (PSRL) of 0.2 mg/kg. TestAmerica's practical quantitation limit (PQL) for Silver is 1 mg/kg. The laboratory cannot maintain system cleanliness at this low level; therefore, corrective action is not initiated. It can be noted that the concentration found in the method blank is less than half of the laboratory standard PQL, and associated sample results were either non-detect or less than the reporting limit.

Zinc is present in the method blank associated with batch 280-248528 at 0.745 mg/kg, which is greater than half the project specific reporting limit (PSRL) of 1 mg/kg. TestAmerica's practical quantitation limit (PQL) for Zinc is 3 mg/kg. The laboratory cannot maintain system cleanliness at this low level; therefore, corrective action is not initiated. It can be noted that the concentration found in the method blank is less than half of the laboratory standard PQL, and with the exception of 'blank' sample J1V126, the associated sample amounts are twenty times greater than the method blank concentration.

Low levels of Aluminum are present in the method blank associated with batch 280-248528. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

Silicon was recovered outside the control limits, biased low, in the LCS associated with batch 280-248528 and in the Matrix Spike performed on sample J1V113 in batch 280-248528. The associated sample results have been flagged "N". Silicon is a poor performer and has a history of reacting inconsistently. Data are reported as is.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1V113; therefore, control limits are not applicable.

No other anomalies were encountered.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-454

Director: H. Weber	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7 days 8B	Data Turnaround		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-81, Verification, excavation		SAF No.: RC-075
Chest No.: RCC-07-013	Field Logbook No.: EL-1662-03	COA: 000D812000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131274		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS: one

Special Handling and/or Storage: 10-15-14 CMB cool 4C

Page 1 of 3

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis				
				Cool 4C	G/P	1	250mL	See Item (1) in Special Instructions	TPH-Diesel Range - WTPH-D +	PAHs - 8310	PCBs - 8082	
J1V113	SOIL	10/15/14	1252	X	X	X	X					
J1V114	SOIL	10/15/14	1242	X	X	X	X					
J1V115	SOIL	10/15/14	1248	X	X	X	X					
J1V116	SOIL	10/15/14	1232	X	X	X	X					
J1V117	SOIL	10/15/14	1238	X	X	X	X					

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Kenther Weber / [illegible]	10/15/14 1313	S. Martinez / S. Martinez	10/15/14 1313
S. Martinez / S. Martinez	10/15/14 1545	C. Bingham	10-15-14 1545
C. Bingham	10-15-14 1550	1060 Battelle, fridge #1A	10-15-14 1550
1060 Battelle, fridge #1A	10-16-14 0730	C. Bingham	10-16-14 0730
C. Bingham WCH	10-16-14 0735	fed EX	
			10/17/14 9:00

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV) (Mercury)

1.0, 0.5 IRG of=0.0 Finished by MCP 10/17/14

REVIEWED BY K. Weaver DATE 10-16-14

JP0872

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-454

Collector: H. Weber	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-81, Verification, excavation		SAF No.: RC-075
Ice Chest No.: KCC-07-013	Field Logbook No.: EL-1662-03	COA: 000D812000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: 1131274		Bill of Lading/Air Bill No.: See OSPC

Price Code: 7 days 8B

Data Turnaround:

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage: None 10-15-14 CMB

Cool 4C

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
				Type of Container	G/P	aG	aG	aG						
				No. of Container(s)	1	1	1	1						
				Volume	250mL	125mL	250mL	250mL						
				Sample Analysis	See Item (1) in Special Instructions	TPH-Diesel Range - WTPH-D +	PAHs - 8310	PCBs - 8082						
J1V118	SOIL	10/15/14	1223	X	X	X	X							
J1V119	SOIL	10/15/14	1228	X	X	X	X							
J1V120	SOIL	10/15/14	1213	X	X	X	X							
J1V121	SOIL	10/15/14	1218	X	X	X	X							
J1V122	SOIL	10/15/14	1202	X	X	X	X							

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Heather Weber / DHL	10/15/14 1313	S Martinez / S Martinez	10/15/14 1313
S Martinez / S Martinez	10/15/14 1545	C. Bingham	10-15-14 1545
C. Bingham	10-15-14 1550	1060 Battelle, fridge #1A	10-15-14 1550
1060 Battelle, fridge #1A	10-16-14 0730	C. Bingham	10-16-14 0730
C. Bingham	10-16-14 0735	fed Ex	
			10/17/14 9:00

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV) (Mercury)

REVIEWED BY K. Woodward DATE 10-16-14

FINAL SAMPLE DISPOSITION: Disposal Method / Disposed By / Date/Time

JP0872

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-454

Collector: H. Weber	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-81, Verification, excavation		SAF No.: RC-075
Ice Chest No.: RCC-07-013	Field Logbook No.: EL-1662-03	COA: 000D812000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A13/274		Bill of Lading/Air Bill No.: See OSPC

Price Code: 7 days 8B

Data Turnaround:

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage: None 10-15-14 CMS; Cool 4C

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis: See Item (1) in Special Instructions	Sample Analysis: TPH-Diesel Range - WTPH-D +	Sample Analysis: PAHs - 8310	Sample Analysis: PCBs - 8082
				Cool 4C	G/P	1	250mL				
				Cool 4C	aG	1	125mL				
				Cool 4C	aG	1	250mL				
				Cool 4C	aG	1	250mL				
J1V123	SOIL	10/15/14	1209					X	X	X	X
J1V124	SOIL	10/15/14	1308					X	X	X	X
J1V125	SOIL	10/15/14	1202					X	X	X	X
J1V126	SOIL	10/15/14	1157					X	n/a	n/a	n/a

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Heather Weber/JDA	10/15/14 1313	Shannon L. Martin	10/15/14 1313
Shannon L. Martin	10/15/14 1545	C. Bingham	10-15-14 1545
C. Bingham	10-15-14 1550	10160 Battelle, fridge #1A	10-15-14 1550
10160 Battelle, fridge #1A	10-16-14 0730	C. Bingham	10-16-14 0730
C. Bingham WCH	10-16-14 0735	fed Ex	
			10/17/14 9:00

Sign/Print Names

FINAL SAMPLE DISPOSITION: Disposal Method: ____ Disposed By: ____ Date/Time: ____

WCH-EE-011

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

REVIEWED BY K. WOODWARD DATE 10-16-14

JP0872

Appendix 5

Data Validation Supporting Documentation

GENERAL ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-D-81		DATA PACKAGE:	JP0872	
VALIDATOR:	ELR	LAB:	TAL	DATE:	11/21/14
			SDG:	JP0872	
ANALYSES PERFORMED					
8015	8021	8141	8151	~~8315~~	
		WTPH-HCID	WTPH-G	WTPH-D	
SAMPLES/MATRIX:					
J1V113	J1V114	J1V115	J1V116	J1V117	J1V118
J1V119	J1V120	J1V121	J1V122	J1V123	J1V124
J1V125					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes No N/A

Comments: _____

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

Initial calibrations acceptable? ..... Yes No N/A

Continuing calibrations acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

GENERAL ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No (N/A)
Calibration blank results acceptable? (Levels D, E) ..... Yes No (N/A)
Laboratory blanks analyzed? ..... (Yes) No N/A
Laboratory blank results acceptable? ..... Yes (No) N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes (No) N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: 10-36- 15, 16, 17, 20, 22, 23 25 - OK
10-24- 15, 16, 20 22 23 25 - OK

no PBS

4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? ..... (Yes) No N/A
Surrogate/system monitoring compound recoveries acceptable? ..... (Yes) No N/A
Surrogates traceable? (Levels D, E) ..... Yes No (N/A)
Surrogates expired? (Levels D, E) ..... Yes No (N/A)
MS/MSD samples analyzed? ..... (Yes) No N/A
MS/MSD results acceptable? ..... (Yes) No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
MS/MSD standards expired? (Levels D, E) ..... Yes No (N/A)
LCS/BSS samples analyzed? ..... (Yes) No N/A
LCS/BSS results acceptable? ..... (Yes) No N/A
Standards traceable? (Levels D, E) ..... Yes No (N/A)
Standards expired? (Levels D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Performance audit sample(s) analyzed? ..... Yes (No) N/A
Performance audit sample results acceptable? ..... Yes No (N/A)

Comments:

no PBS

GENERAL ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A
Duplicate results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
Field duplicate RPD values acceptable? ..... Yes No N/A
Field split RPD values acceptable? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

6. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A
Sample holding times acceptable? ..... Yes No N/A

Comments: _____

GENERAL ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:_____

_____

_____

_____

_____

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other aborbant) cleanup performed? ..... Yes No N/A

Lot check performed? ..... Yes No N/A

Check recoveries aceptable? ..... Yes No N/A

Check materials traceable? ..... Yes No N/A

Check materials Expired? ..... Yes No N/A

Analytical batch QC given similar cleanup? ..... Yes No N/A

Transcription/Calculation Errors? ..... Yes No N/A

Comments:_____

_____

_____

_____

_____

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Method Blank - Batch: 280-248804

Method: NWTPH-Dx
Preparation: 3550C

Lab Sample ID:	MB 280-248804/1-A	Analysis Batch:	280-249000	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-248804	Lab File ID:	10220038.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.6 g
Analysis Date:	10/23/2014 0948	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	10/20/2014 2155			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
C10-C36	2110	J	980	3900
C10-C28	1900	J	660	3900

Surrogate	% Rec	Acceptance Limits
o-Terphenyl	69	49 - 115

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 280-248804

Method: NWTPH-Dx
Preparation: 3550C

LCS Lab Sample ID:	LCS 280-248804/2-A	Analysis Batch:	280-249000	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-248804	Lab File ID:	10220007.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.0 g
Analysis Date:	10/22/2014 1137	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	10/20/2014 2155			Injection Volume:	1 uL
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 280-248804/3-A	Analysis Batch:	280-249000	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-248804	Lab File ID:	10220008.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.4 g
Analysis Date:	10/22/2014 1201	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	10/20/2014 2155			Injection Volume:	1 uL
Leach Date:	N/A				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
C10-C36	73	87	57 - 115	13	23		
C10-C28	72	86	53 - 115	13	23		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
o-Terphenyl	54	64	49 - 115

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Laboratory Control/
Laboratory Duplicate Data Report - Batch: 280-248804

Method: NWTPH-Dx
Preparation: 3550C

LCS Lab Sample ID:	LCS 280-248804/2-A	Units: ug/Kg	LCSD Lab Sample ID:	LCSD 280-248804/3-A	
Client Matrix:	Solid		Client Matrix:	Solid	
Dilution:	1.0		Dilution:	1.0	
Analysis Date:	10/22/2014 1137		Analysis Date:	10/22/2014 1201	
Prep Date:	10/20/2014 2155		Prep Date:	10/20/2014 2155	
Leach Date:	N/A		Leach Date:	N/A	

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
C10-C36	66700	63700	48400	55200
C10-C28	66700	63700	48100	54700

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-248804

Method: NWTPH-Dx
Preparation: 3550C

MS Lab Sample ID:	280-61368-3	Analysis Batch:	280-249000	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-248804	Lab File ID:	10220012.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.5 g
Analysis Date:	10/22/2014 1337			Final Weight/Volume:	1 mL
Prep Date:	10/20/2014 2155			Injection Volume:	1 uL
Leach Date:	N/A				

MSD Lab Sample ID:	280-61368-3	Analysis Batch:	280-249000	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-248804	Lab File ID:	10220013.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.5 g
Analysis Date:	10/22/2014 1401			Final Weight/Volume:	1 mL
Prep Date:	10/20/2014 2155			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
C10-C36	77	81	57 - 115	5	23		
C10-C28	78	81	56 - 115	5	23		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
o-Terphenyl	64	64	49 - 115

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-248804

Method: NWTPH-Dx
Preparation: 3550C

MS Lab Sample ID:	280-61368-3	Units: ug/Kg	
Client Matrix:	Solid		
Dilution:	1.0		
Analysis Date:	10/22/2014 1337		
Prep Date:	10/20/2014 2155		
Leach Date:	N/A		

MSD Lab Sample ID:	280-61368-3
Client Matrix:	Solid
Dilution:	1.0
Analysis Date:	10/22/2014 1401
Prep Date:	10/20/2014 2155
Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
C10-C36	1800	J	68100	68100	54600	57300
C10-C28	1200	J	68100	68100	53900	56600

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Method Blank - Batch: 280-249292

Method: NWTPH-Dx
Preparation: 3550C

Lab Sample ID:	MB 280-249292/1-A	Analysis Batch:	280-249408	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-249292	Lab File ID:	10240005.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	32.0 g
Analysis Date:	10/24/2014 0948	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	10/23/2014 1420			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
C10-C36	930	U	930	3800
C10-C28	640	U	640	3800

Surrogate	% Rec	Acceptance Limits
o-Terphenyl	66	49 - 115

Lab Control Sample - Batch: 280-249292

Method: NWTPH-Dx
Preparation: 3550C

Lab Sample ID:	LCS 280-249292/2-A	Analysis Batch:	280-249408	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-249292	Lab File ID:	10240006.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.4 g
Analysis Date:	10/24/2014 1012	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	10/23/2014 1420			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
C10-C36	65800	54700	83	57 - 115	
C10-C28	65800	54600	83	53 - 115	

Surrogate	% Rec	Acceptance Limits
o-Terphenyl	65	49 - 115

Client: Washington Closure Hanford

Job Number: 280-61368-1
Sdg Number: JP0872

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-249292

Method: NWTPH-Dx
Preparation: 3550C

MS Lab Sample ID:	280-61368-2	Analysis Batch:	280-249408	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-249292	Lab File ID:	10240008.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.2 g
Analysis Date:	10/24/2014 1100			Final Weight/Volume:	1 mL
Prep Date:	10/23/2014 1420			Injection Volume:	1 uL
Leach Date:	N/A				

MSD Lab Sample ID:	280-61368-2	Analysis Batch:	280-249408	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-249292	Lab File ID:	10240009.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.6 g
Analysis Date:	10/24/2014 1124			Final Weight/Volume:	1 mL
Prep Date:	10/23/2014 1420			Injection Volume:	1 uL
Leach Date:	N/A				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
C10-C36	90	88	57 - 115	4	23		
C10-C28	90	87	56 - 115	5	23		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
o-Terphenyl	69	65	49 - 115

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-249292

Method: NWTPH-Dx
Preparation: 3550C

MS Lab Sample ID:	280-61368-2	Units:	ug/Kg	MSD Lab Sample ID:	280-61368-2
Client Matrix:	Solid			Client Matrix:	Solid
Dilution:	1.0			Dilution:	1.0
Analysis Date:	10/24/2014 1100			Analysis Date:	10/24/2014 1124
Prep Date:	10/23/2014 1420			Prep Date:	10/23/2014 1420
Leach Date:	N/A			Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
C10-C36	1000	U	69200	68300	62500	59900
C10-C28	710	U	69200	68300	62400	59500